LITTLE ROCK
Water Reclamation Authority ONE WATER. ONE FUTURE.

11 Clearwater Drive
Little Rock, AR 72204
501.688.1400

Specification Details Index

8/28/2023 10:12:08 AM

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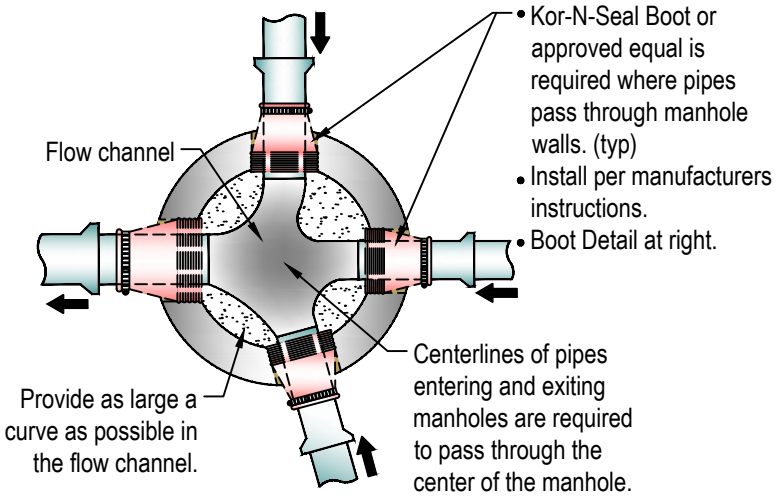
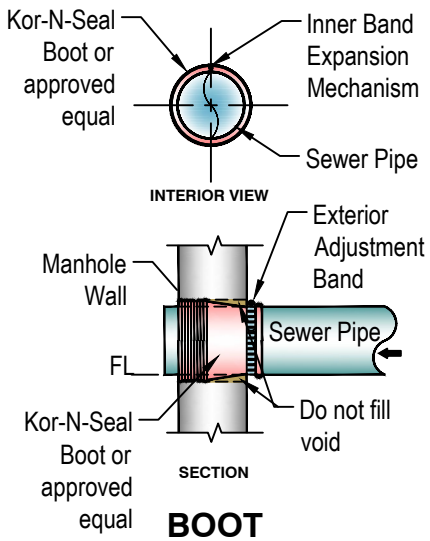


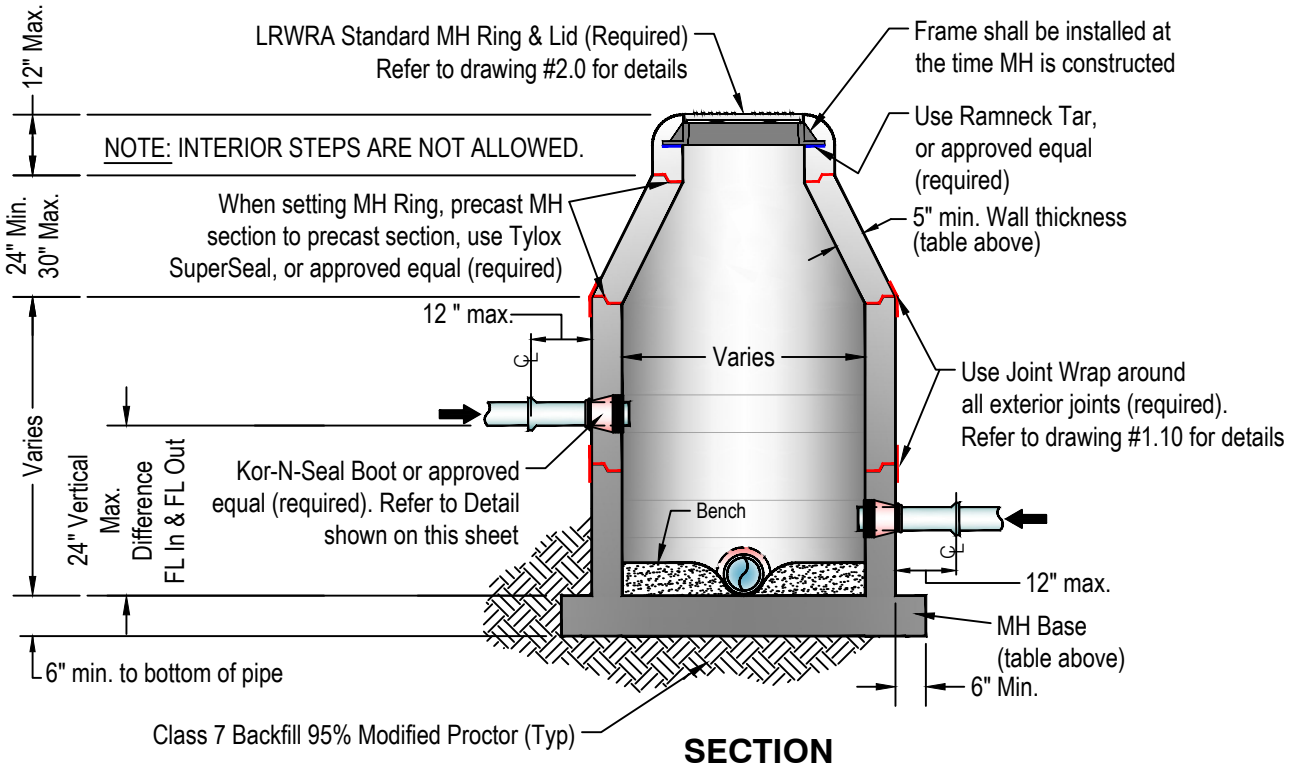
MANHOLE FLOW CHANNEL



BOOT DETAILS

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Lid & Ring Size
4' DIA	5"	6"	24" (< or Equal to 24" Pipes)
5' DIA	6"	8"	30"
6' DIA	7"	8"	36" (> 24" Pipes)



SECTION

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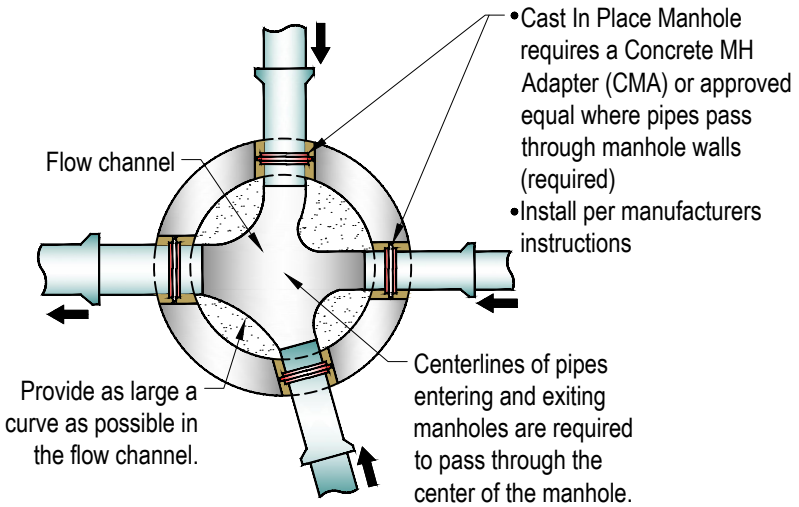
STANDARD PRECAST MANHOLE

1.0

Prepared By: Scott Taylor
Updated: 7/23/2019 4:04:29 PM
Drawing Status: **APPROVED**
Filename: 1.0.dwg



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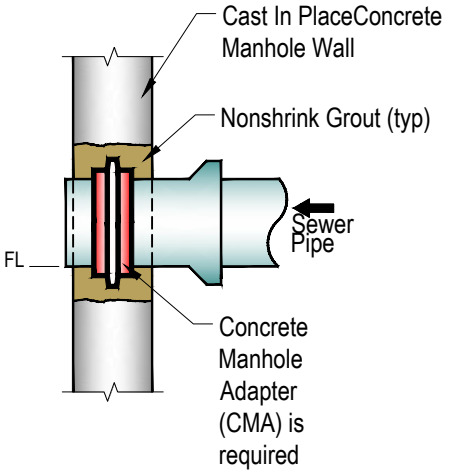

CONCRETE MANHOLE ADAPTER (CMA) DETAIL

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Lid & Ring Size
4' DIA	6"	6"	24" (< or Equal to 24" Pipes)
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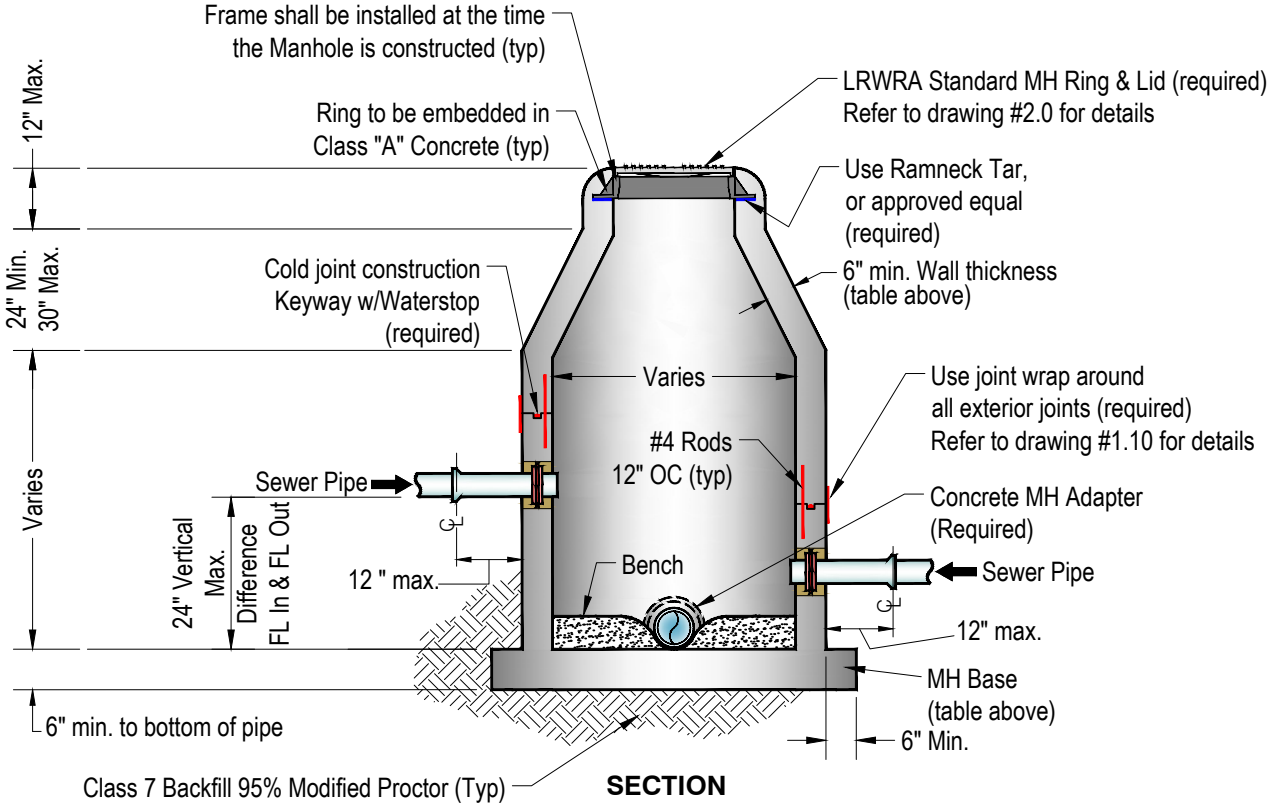

SECTION

LITTLE ROCK Water Reclamation Authority
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STANDARD CAST IN PLACE MANHOLE DETAIL & TABLE

1.1

Prepared By: Scott Taylor
Updated: 7/23/2019 4:05:01 PM
Drawing Status: **APPROVED**
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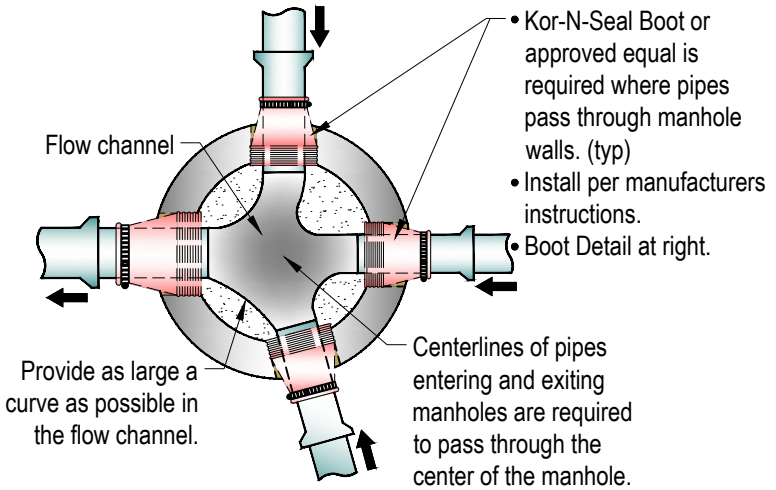

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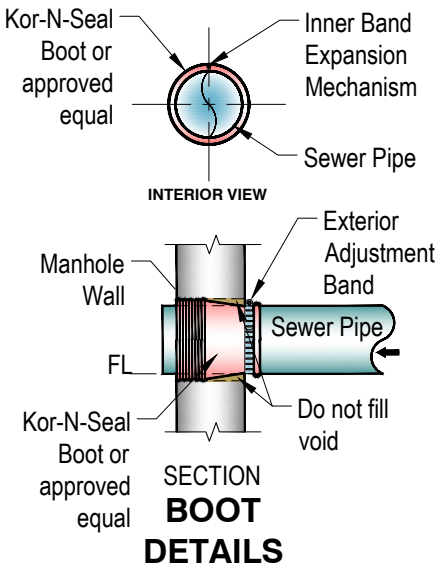

BOOT DETAILS

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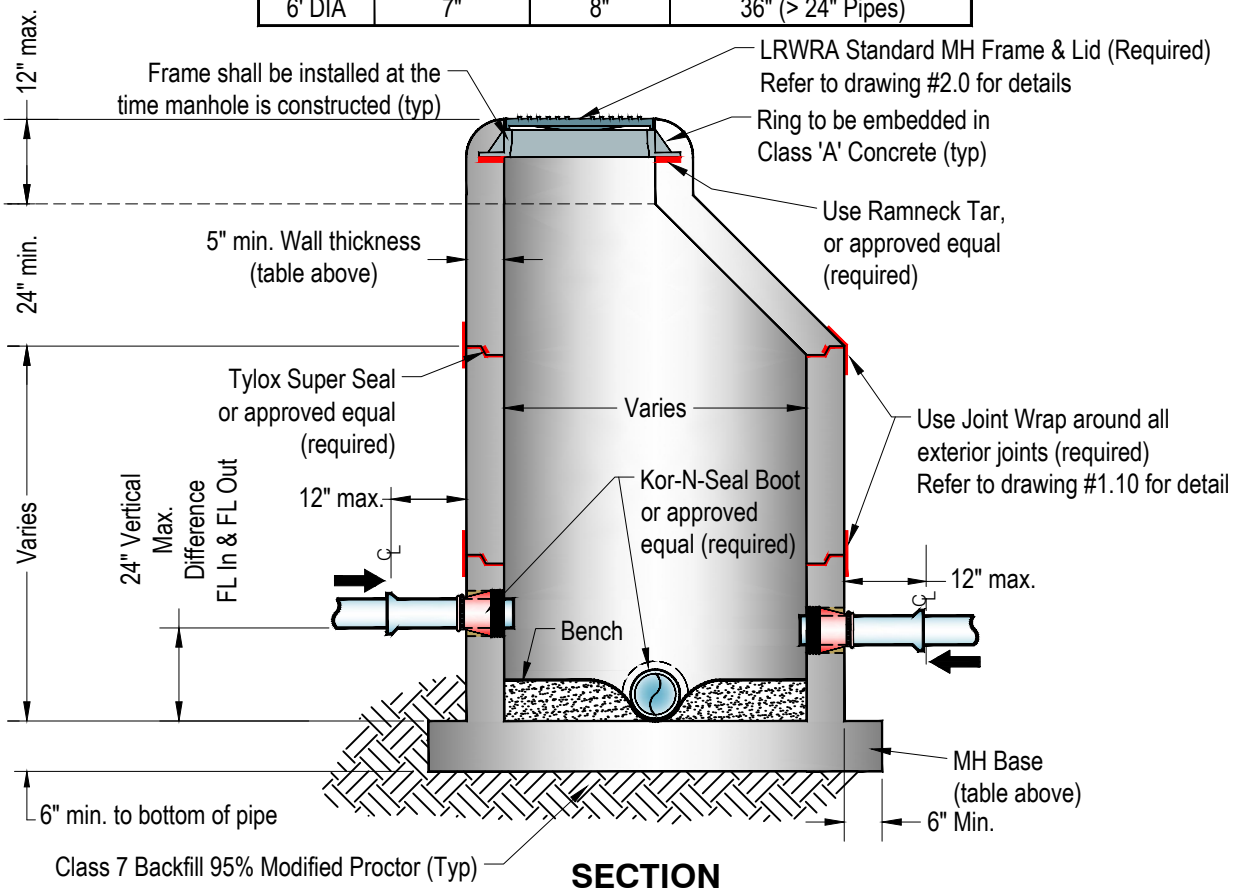

SECTION

LITTLE ROCK Water Reclamation Authority
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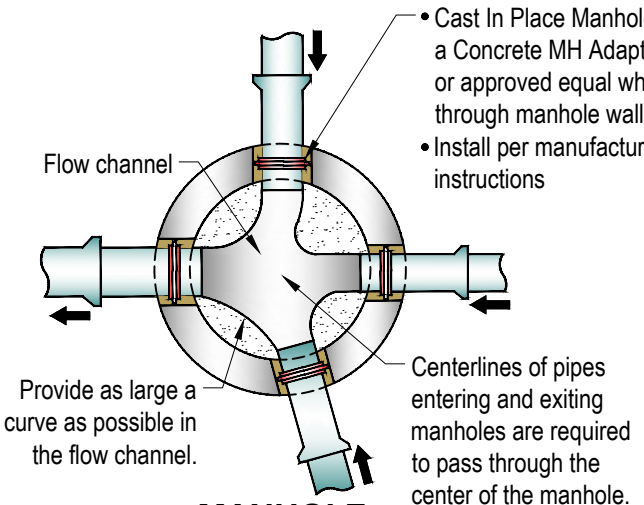
PRECAST ECCENTRIC MANHOLE DETAIL & TABLE

1.2

Prepared By: Scott Taylor
Updated: 7/23/2019 4:05:38 PM
Drawing Status: **APPROVED**
Filename: 1.2.dwg



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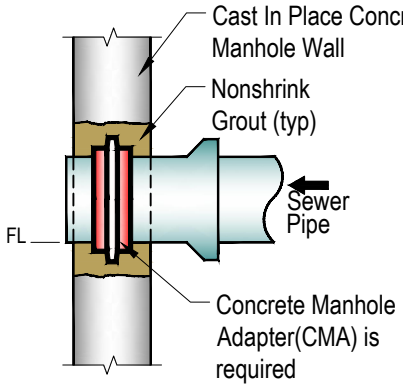

CONCRETE MANHOLE ADAPTER (CMA) DETAIL

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4' DIA	6"	6"	24" (< or Equal to 24" Pipes)
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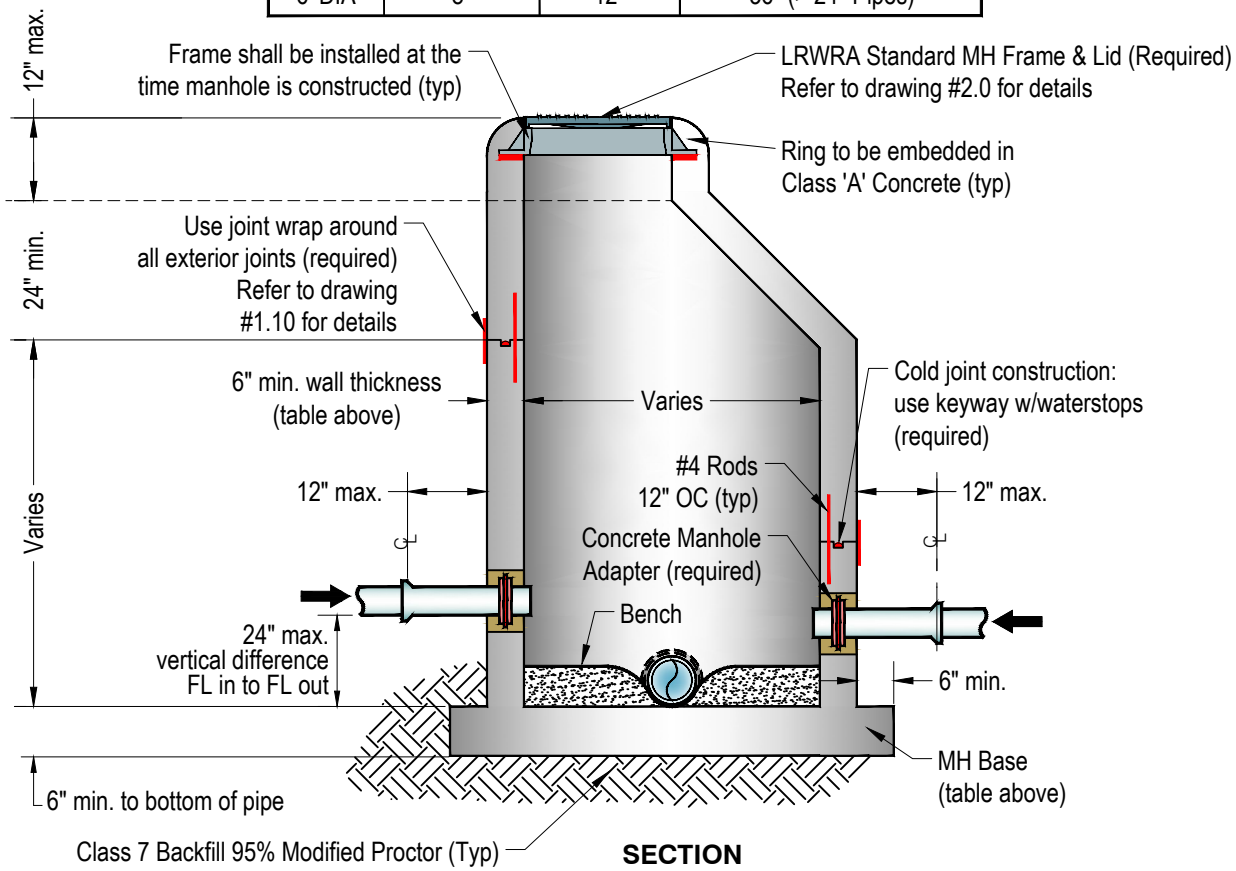

SECTION

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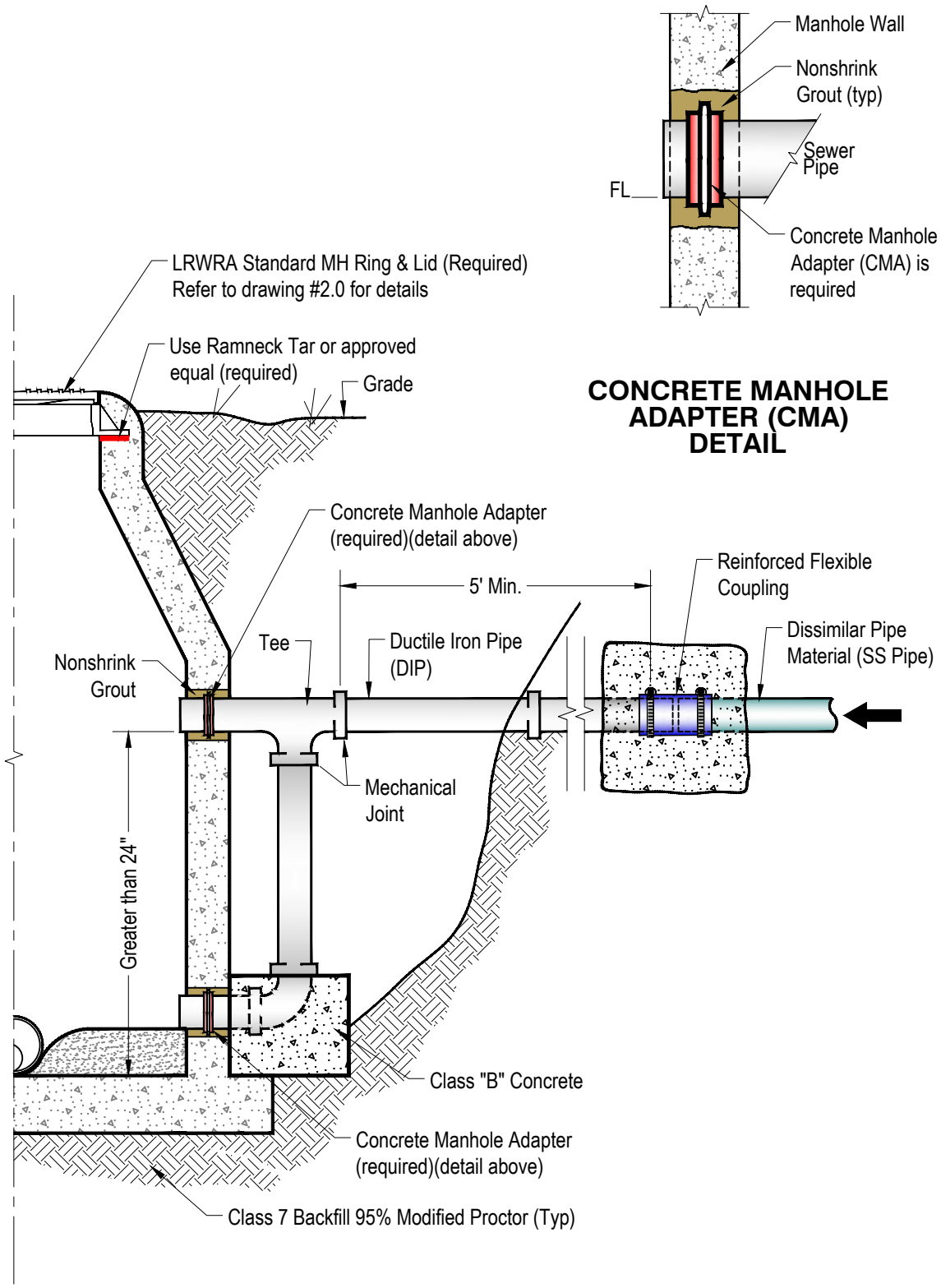
CAST IN PLACE ECCENTRIC MANHOLE DETAIL & TABLE

1.3

Prepared By: Scott Taylor
Updated: 7/23/2019 4:06:02 PM
Drawing Status: **APPROVED**
Filename: 1.3.dwg



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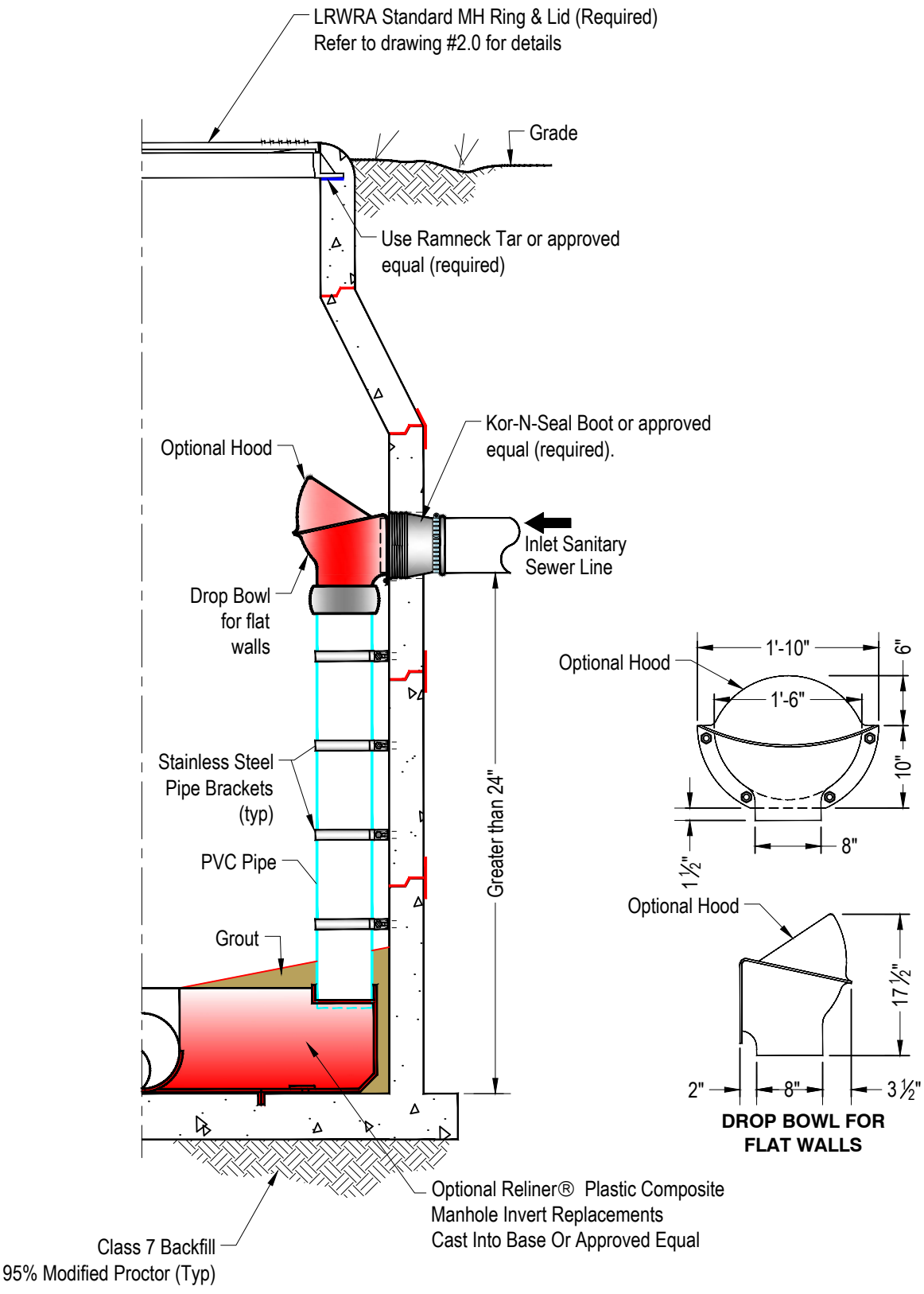
STANDARD OUTSIDE DROP MANHOLE DETAIL

1.4

Prepared By: Scott Taylor
Updated: 7/23/2019 4:06:33 PM
Drawing Status: **APPROVED**
Filename: 1.4.dwg



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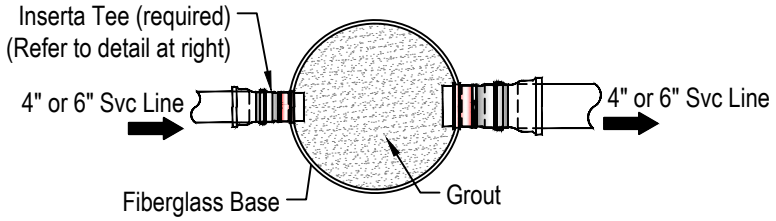
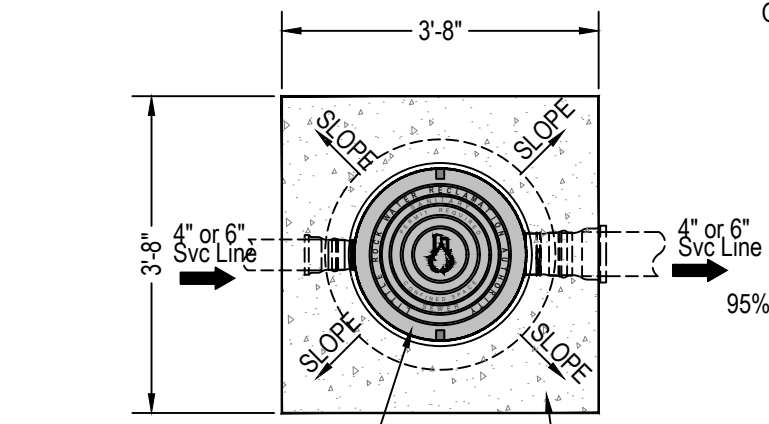
STANDARD INSIDE DROP MANHOLE DETAIL

1.5

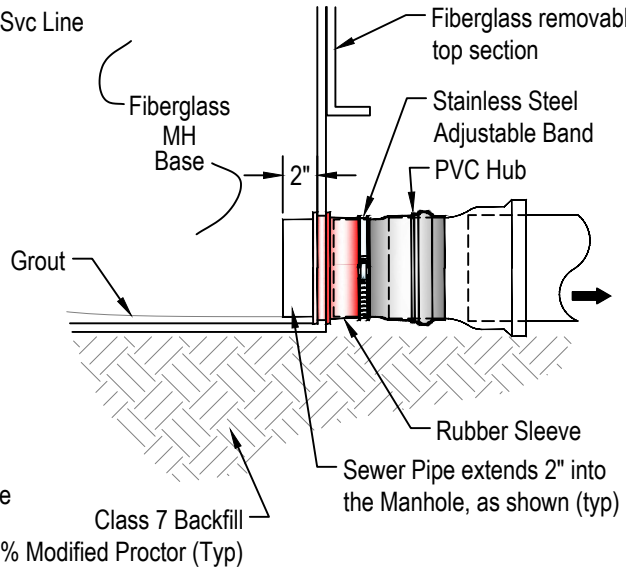
Prepared By: Scott Taylor
Updated: 7/29/2019 10:10:13 AM
Drawing Status: **APPROVED**
Filename: 1.5.dwg

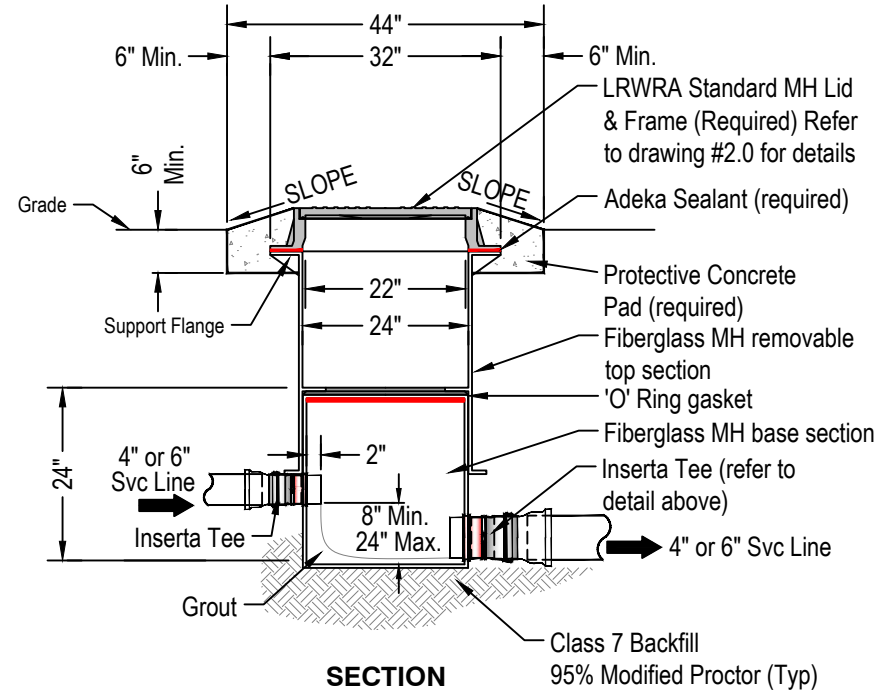


BOTTOM



PLAN VIEW





SECTION

INSERTA TEE DETAIL

Inserta Tee 3-Piece compression fit service connection (or approved equal) consisting of the following: PVC hub, rubber sleeve, and stainless steel band

- 2-ft manholes shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl, ester resins, with fiberglass reinforcements
- Shall consist of two sections, a removable top section and a base section
- Manufactured to meet or exceed all specifications of A.S.T.M. D-3753 latest edition
- Base section shall include a gasket system to provide a seal between the top and base sections

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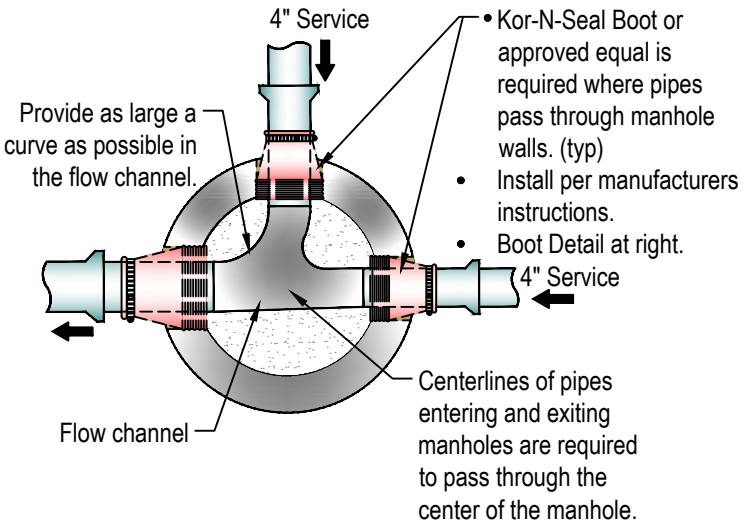
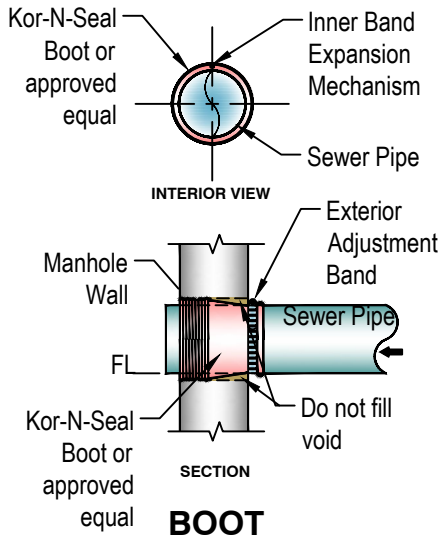
STANDARD TWO FOOT DIAMETER MANHOLE

1.6

Prepared By: Scott Taylor
Updated: 8/2/2019 12:06:48 PM
Drawing Status: **APPROVED**
Filename: 1.6.dwg



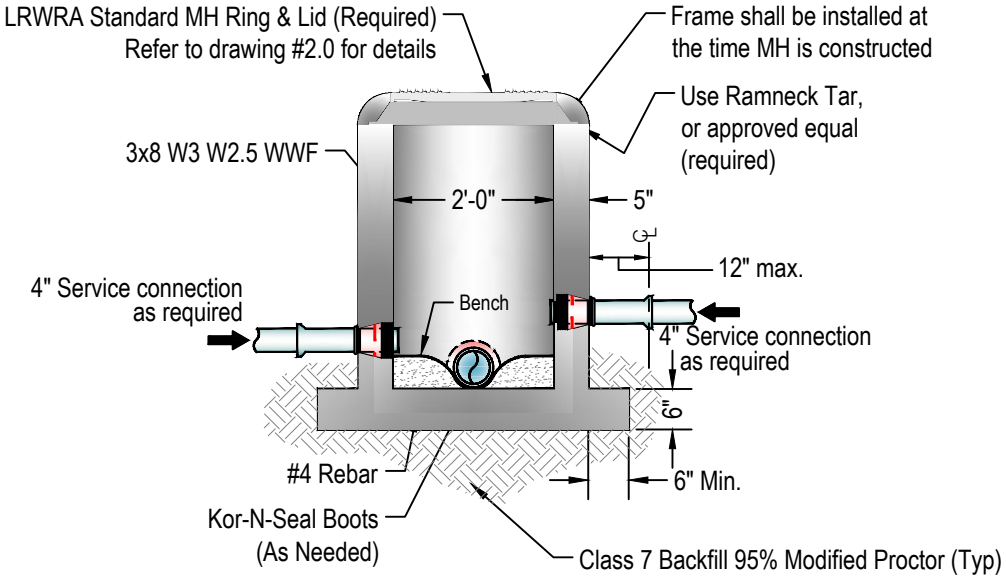
MANHOLE FLOW CHANNEL



BOOT DETAILS

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Lid & Ring Size
2' DIA	5"	6"	24"



SECTION

NOTE:
2' Manhole shall be installed only at an existing end of line and only with approval of Engineering Services division of LRWRA.

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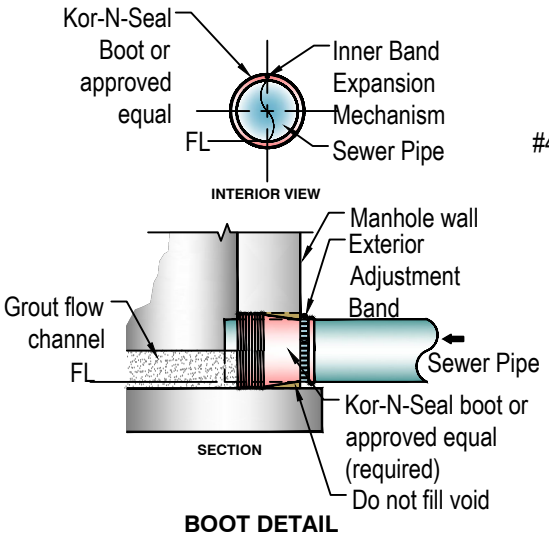
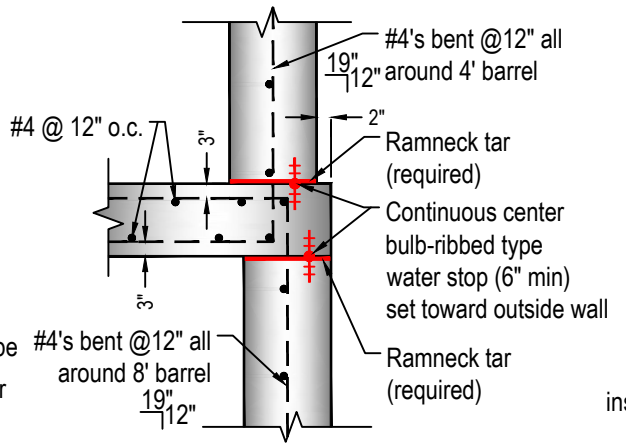
STANDARD PRECAST 2' DIAMETER MANHOLE DETAILS

1.7

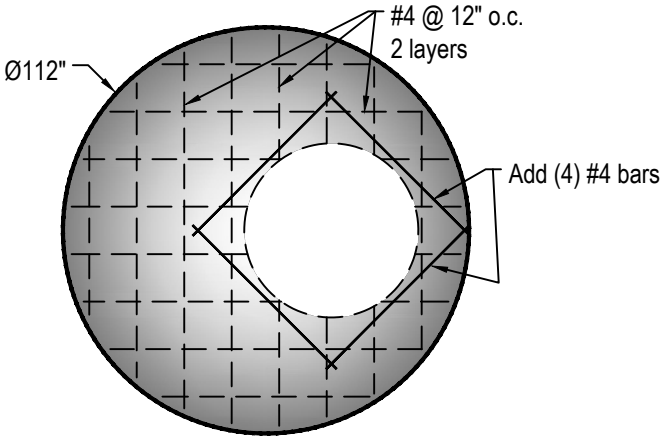
Prepared By: Scott Taylor
Updated: 8/6/2019 1:36:32 PM
Drawing Status: **APPROVED**
Filename: 1.7.dwg



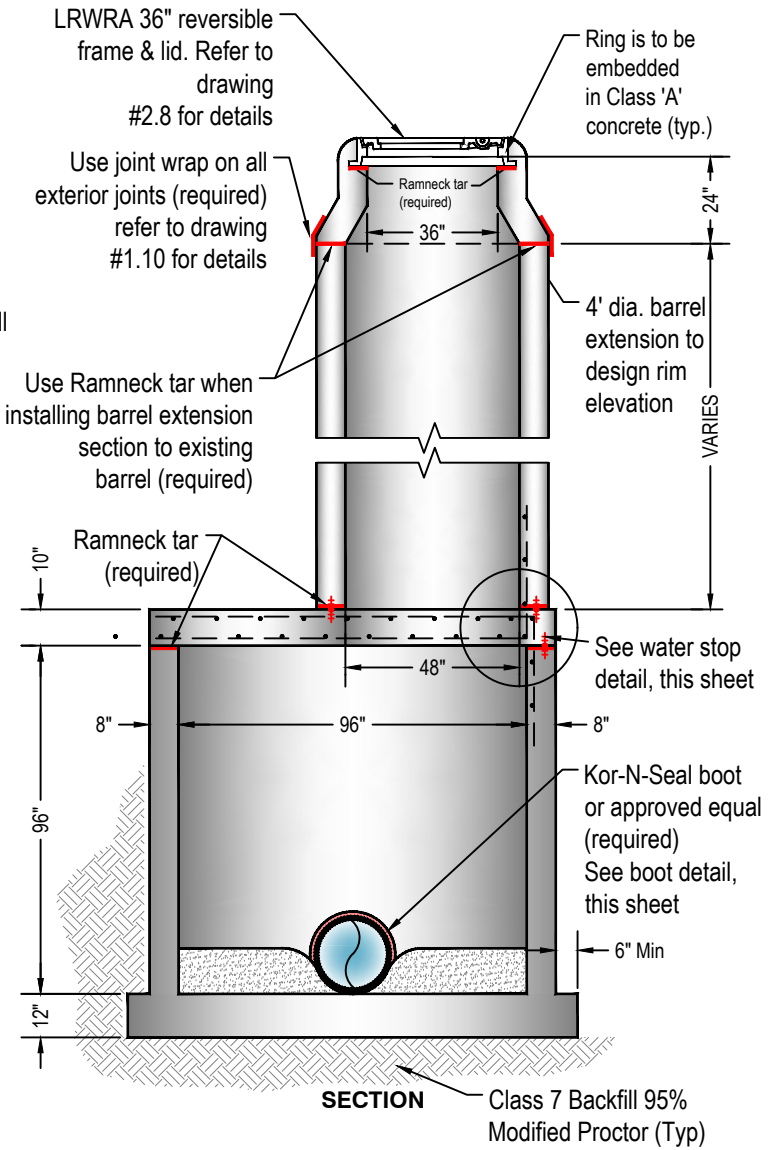
BOOT DETAIL



WATER STOP DETAIL



TOP CAP DETAIL



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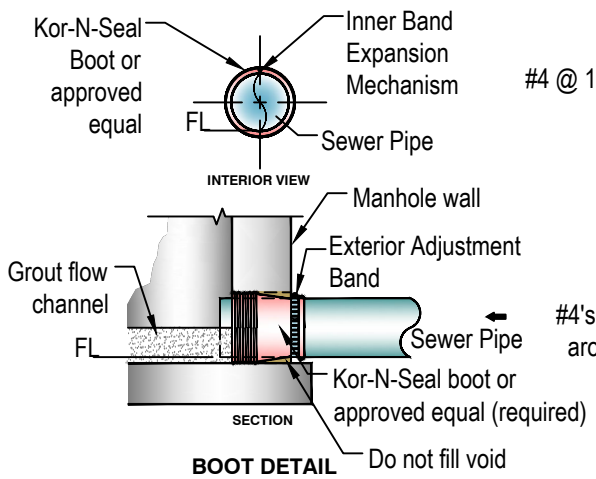
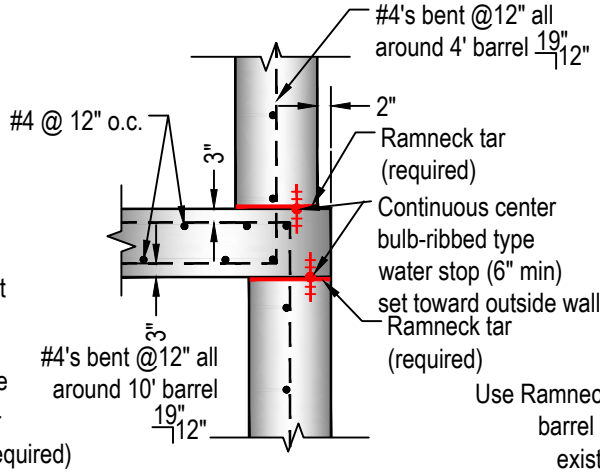
8' DIAMETER MANHOLE DETAILS

1.8

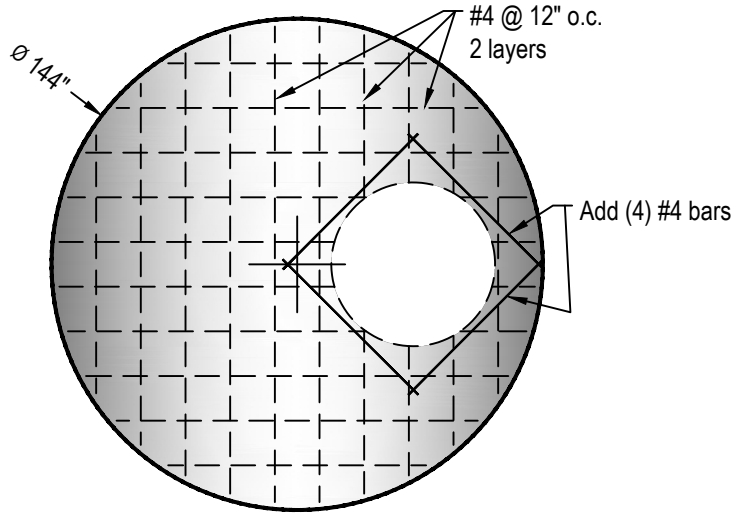
Prepared By: Scott Taylor
Updated: 8/6/2019 1:12:35 PM
Drawing Status: **APPROVED**
Filename: 1.8.dwg



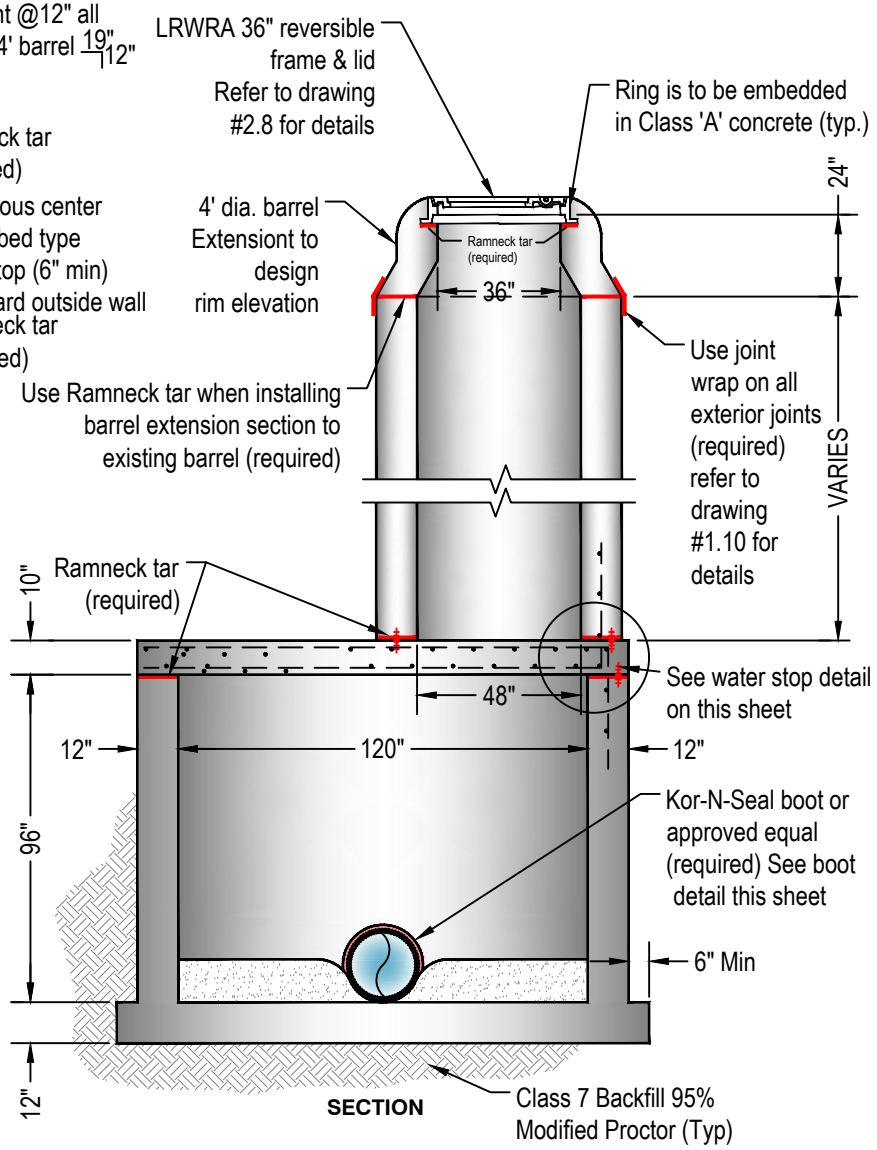
BOOT DETAIL



WATER STOP DETAIL



TOP CAP DETAIL



SECTION

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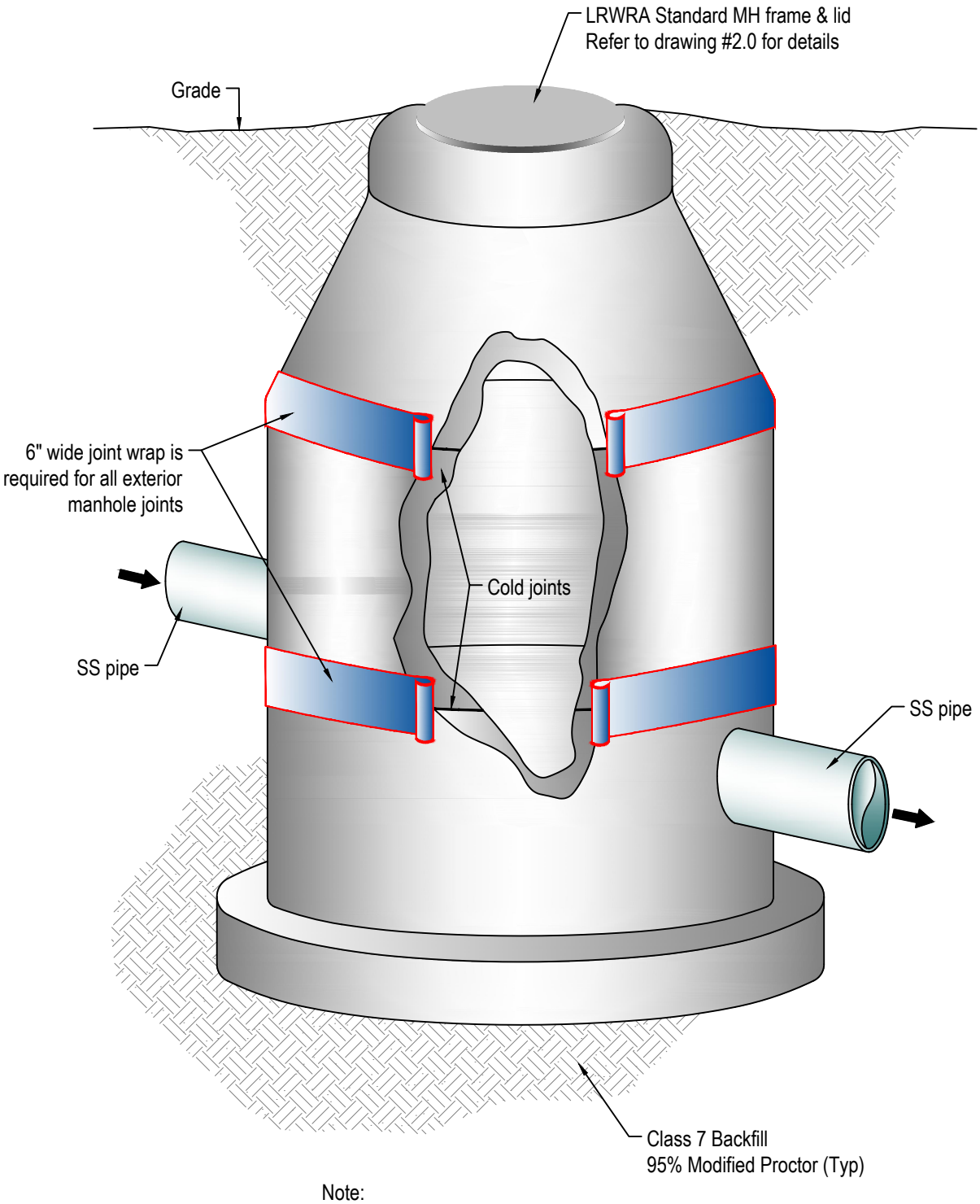
10' DIAMETER MANHOLE DETAILS

1.9

Prepared By: Scott Taylor
Updated: 8/2/2019 12:10:13 PM
Drawing Status: **APPROVED**
Filename: 1.9.dwg



Note:
Joint wrap is to be used on outside of cold joints and on exterior of all precast manhole joints

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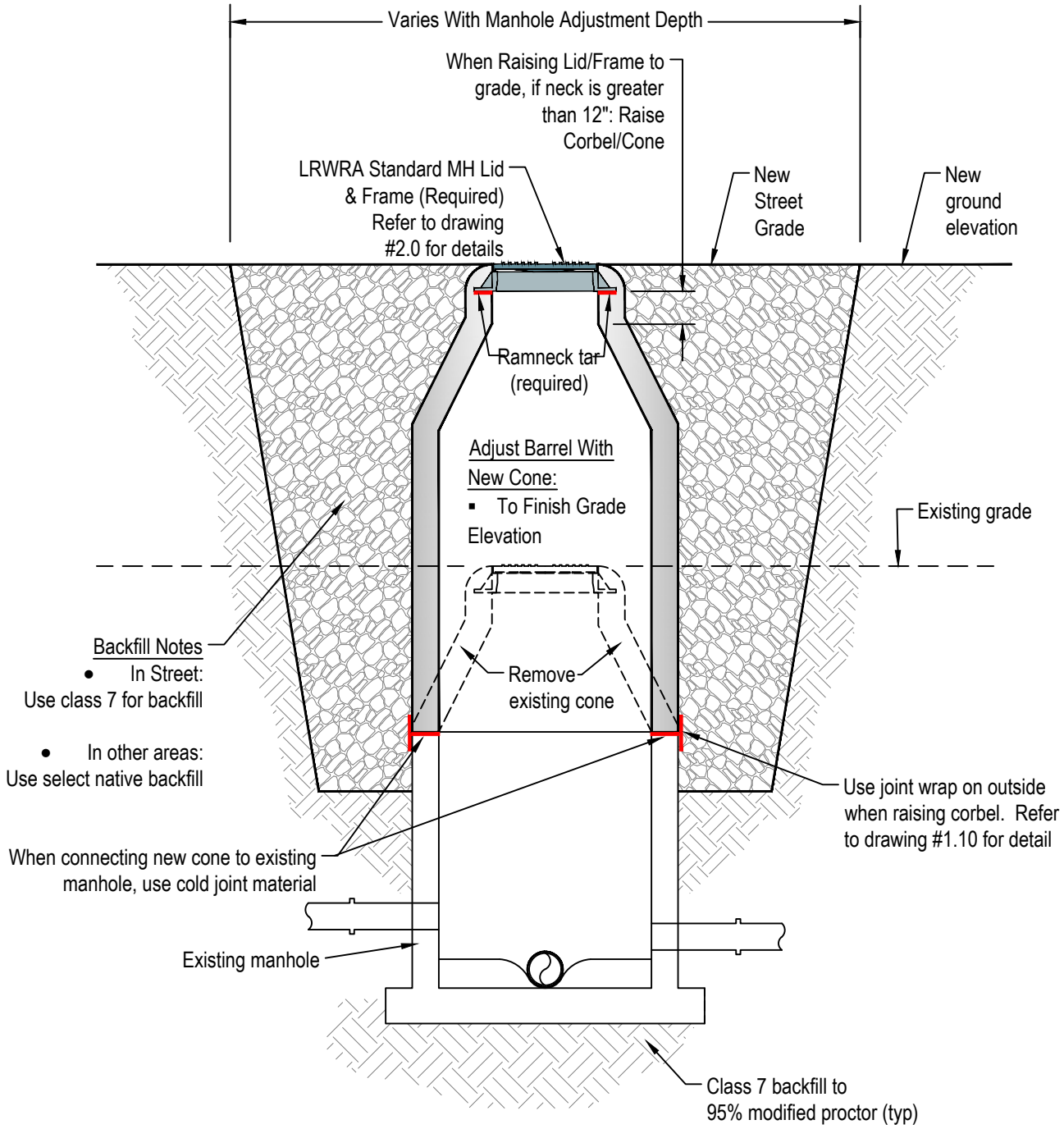
MANHOLE JOINT WRAP DETAIL

1.10

Prepared By: Scott Taylor
Updated: 8/2/2019 12:11:49 PM
Drawing Status: **APPROVED**
Filename: 1.10.dwg



When a manhole adjustment occurs in the street:

- Use the appropriate street repair technique, as noted on LRWRA drawings:
- # 6.0 CITY AND COUNTY STREETS REPAIR DETAILS
- # 6.1 ALLEY REPAIR DETAIL
- # 6.2 ASPHALT / CONCRETE DRIVE AND PARKING AREA REPAIR DETAILS
- # 6.4 GRAVEL ALLEYS AND STREETS REPAIR DETAILS
- # 6.6 CURB AND GUTTER DETAILS INCLUDING STREET MILLING FOR EXISTING CURB AND GUTTER

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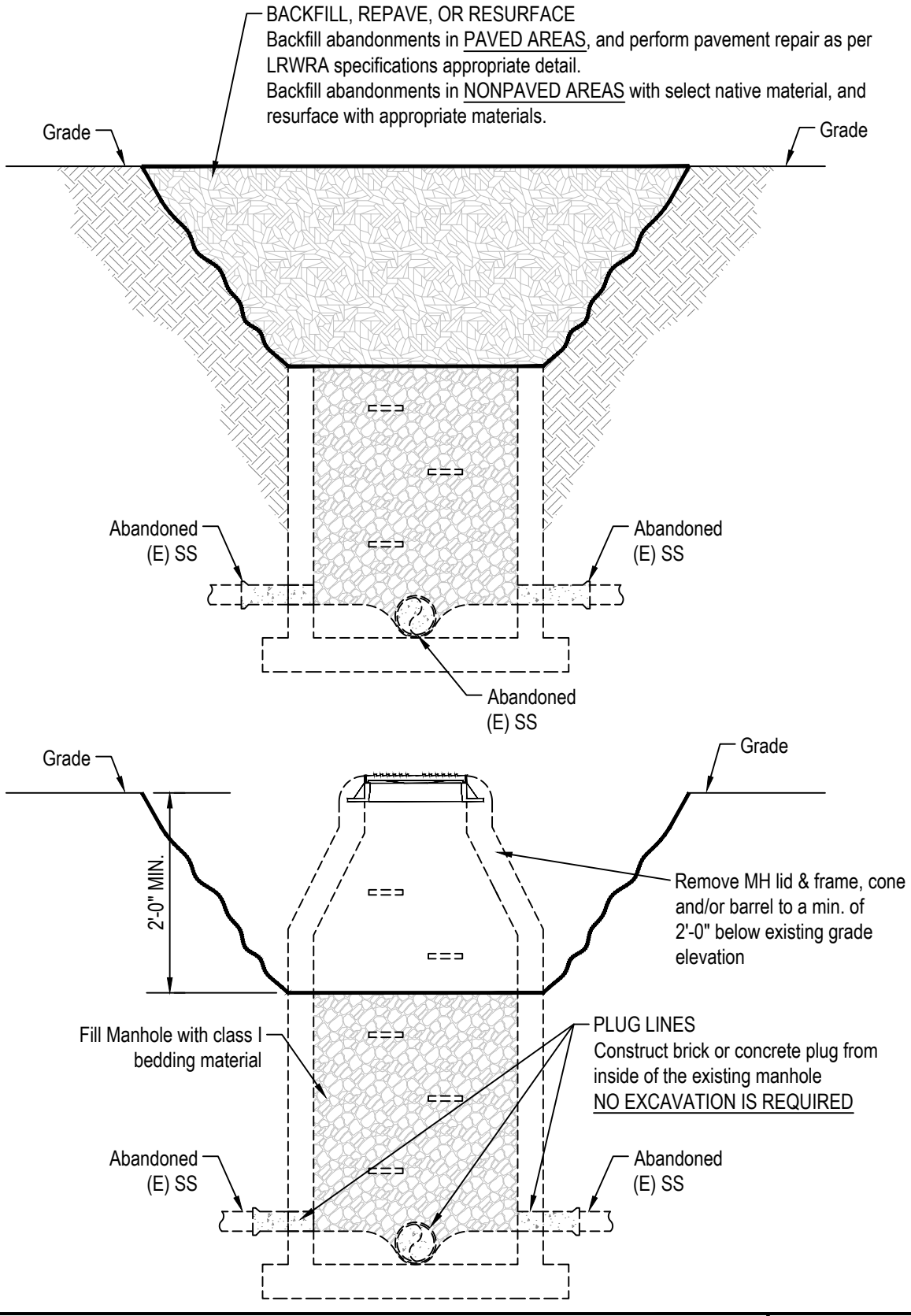
TYPICAL MANHOLE ADJUST TO GRADE DETAIL

1.11

Prepared By: Scott Taylor
Updated: 8/2/2019 12:14:32 PM
Drawing Status: **APPROVED**
Filename: 1.11.dwg



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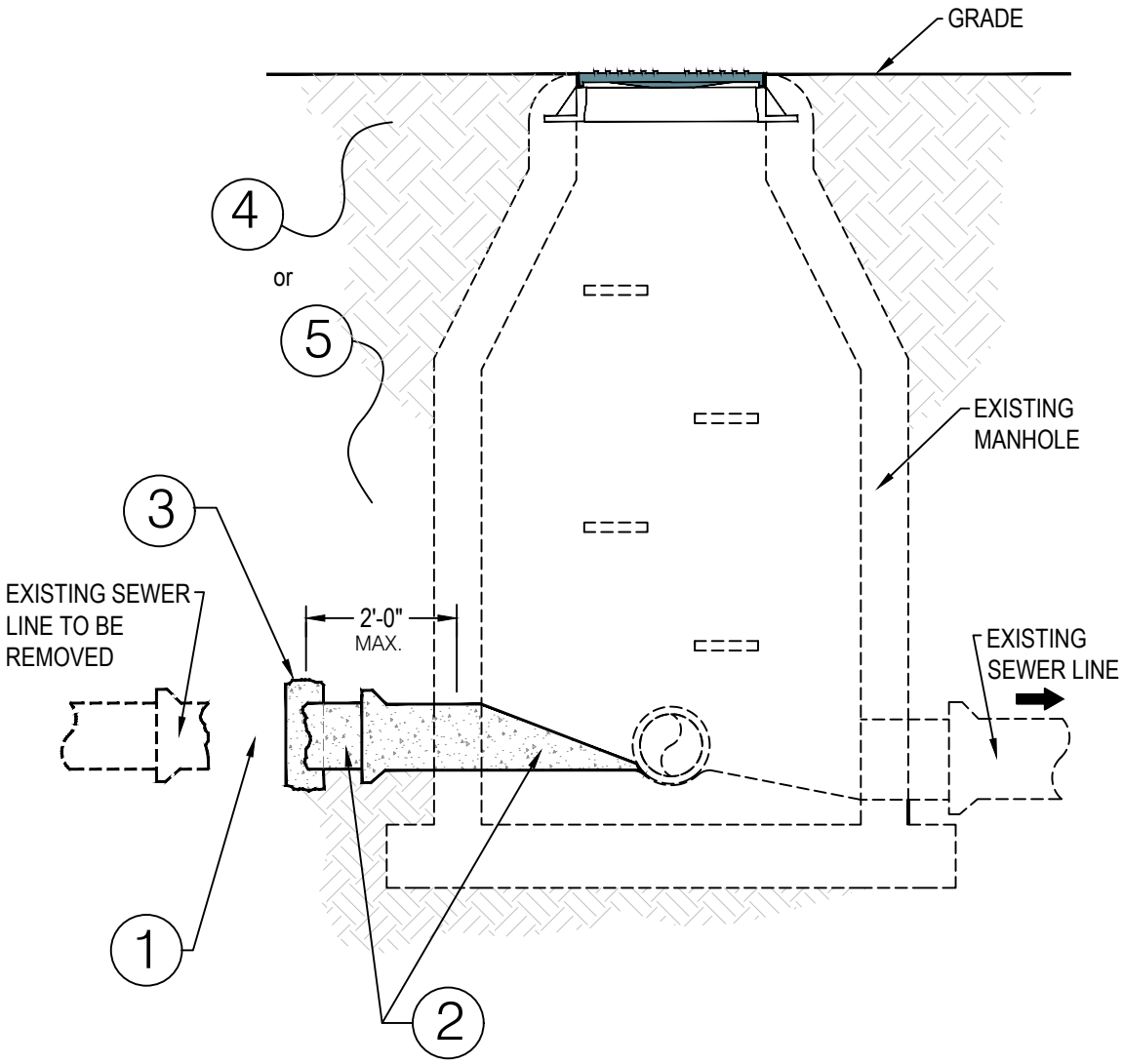
EXISTING MANHOLE ABANDONMENT DETAIL

1.12

Prepared By: Scott Taylor
Updated: 8/2/2019 12:15:30 PM
Drawing Status: **APPROVED**
Filename: 1.12.dwg



1. Expose existing line and PHYSICALLY DISCONNECT the line segment to be removed. (required)
2. Fill remaining Sewer Pipe to be sealed with Nonshrink Grout. (required)
3. Construct a concrete cap around pipe connected to existing manhole. (required)
4. If the manhole is located in a paved area, backfill the excavated area and perform pavement repair. (required)
5. If the manhole is located in a non-paved area, backfill the excavated area with select native material, and resurface with the appropriate materials. (required)

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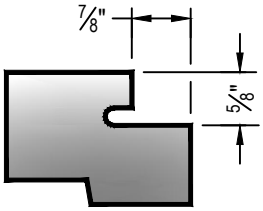
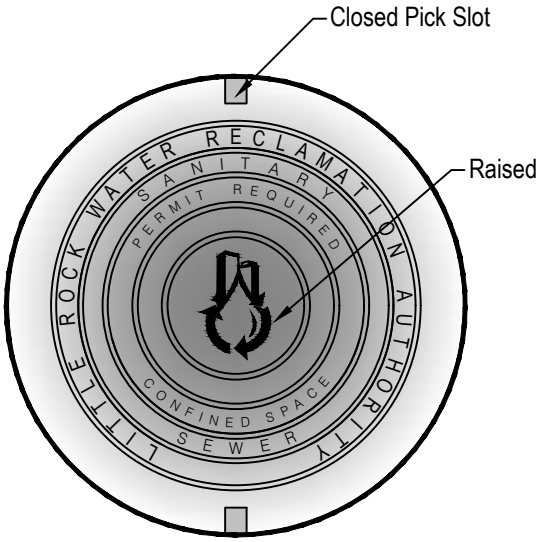
MANHOLE DISCONNECT AND SEAL DETAIL

1.13

Prepared By: Scott Taylor
Updated: 8/6/2019 1:41:26 PM
Drawing Status: **APPROVED**
Filename: 1.13.dwg

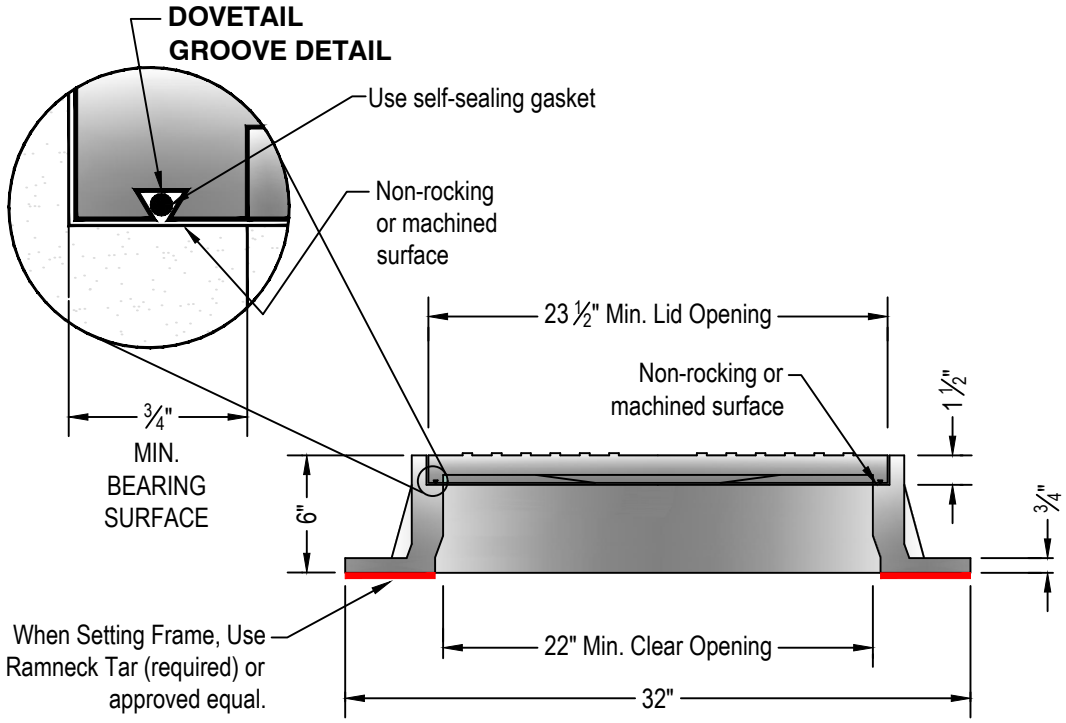


CLOSED PICK SLOT DETAIL



STANDARD LID DETAIL

1. Minimum weight of ring: 125 pounds
2. Minimum weight of lid: 115 pounds
3. Lids are furnished with two closed pick slots.
4. Castings shall be "Made In USA"



STANDARD RING DETAIL

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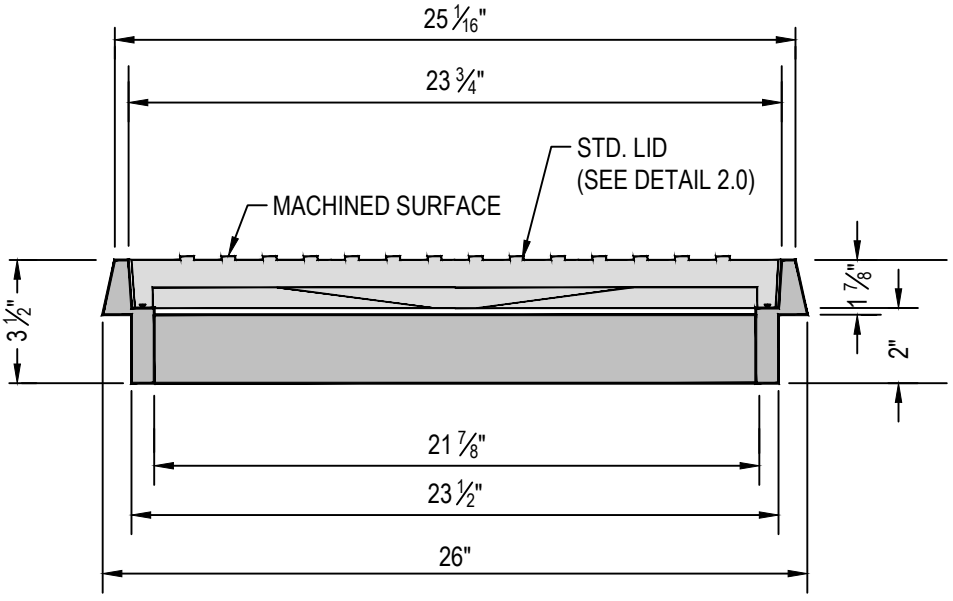
STANDARD MANHOLE RING AND LID

2.0

Prepared By: Scott Taylor
Updated: 7/13/2023 2:12:06 PM
Drawing Status: **APPROVED**
Filename: 2.0.dwg



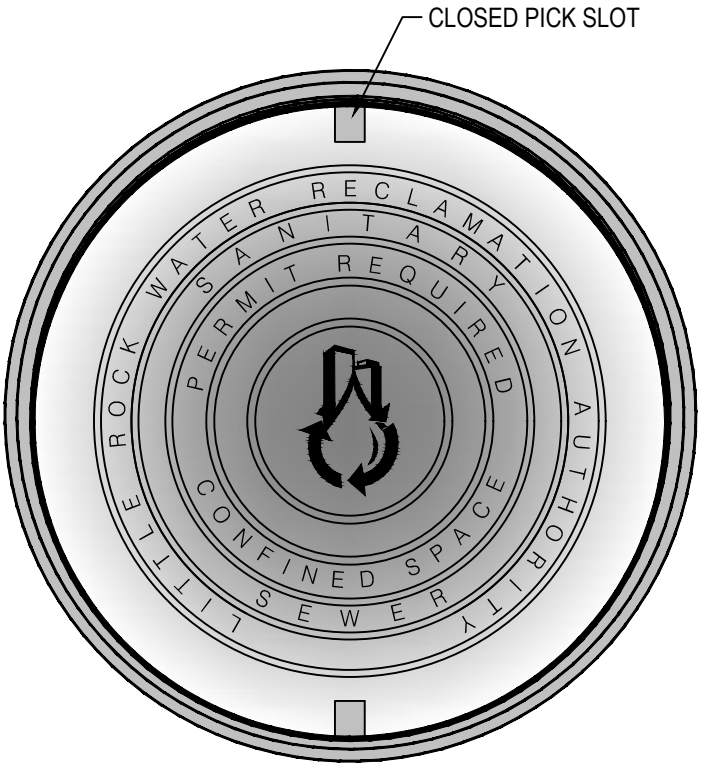
CASTING SHALL BE "MADE IN USA"

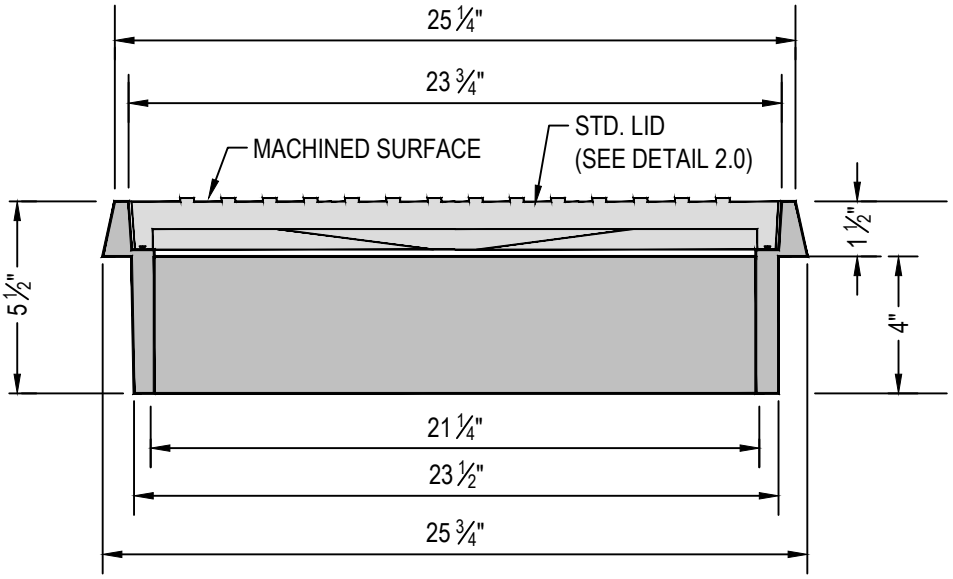
LITTLE ROCK
Water Reclamation Authority
ONE WATER. ONE FUTURE.

2 INCH RING EXTENSION DETAIL

2.1A

Prepared By: Jeremy West
Updated: 7/13/2023 2:12:01 PM
Drawing Status: **APPROVED**
Filename: 2.1A.dwg





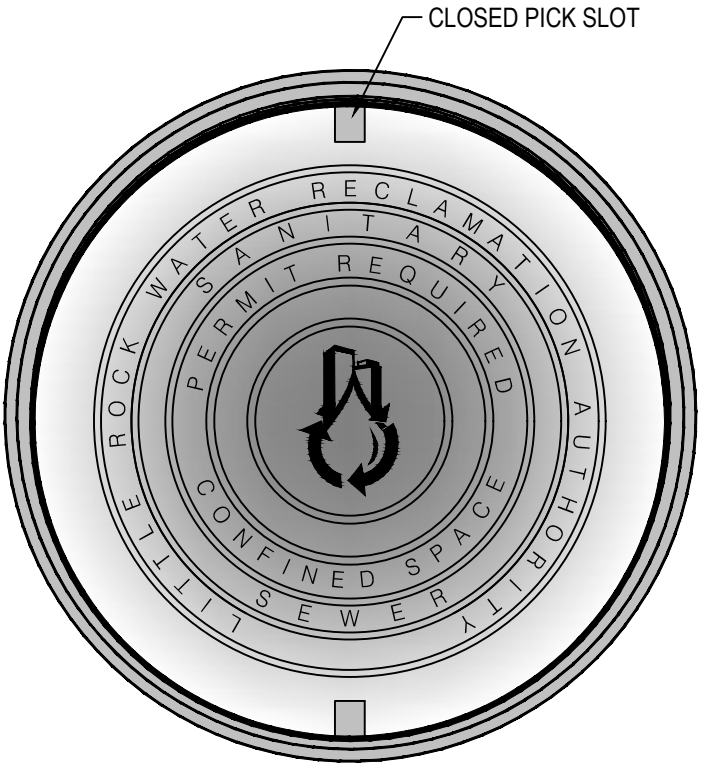
CASTING SHALL BE "MADE IN USA"

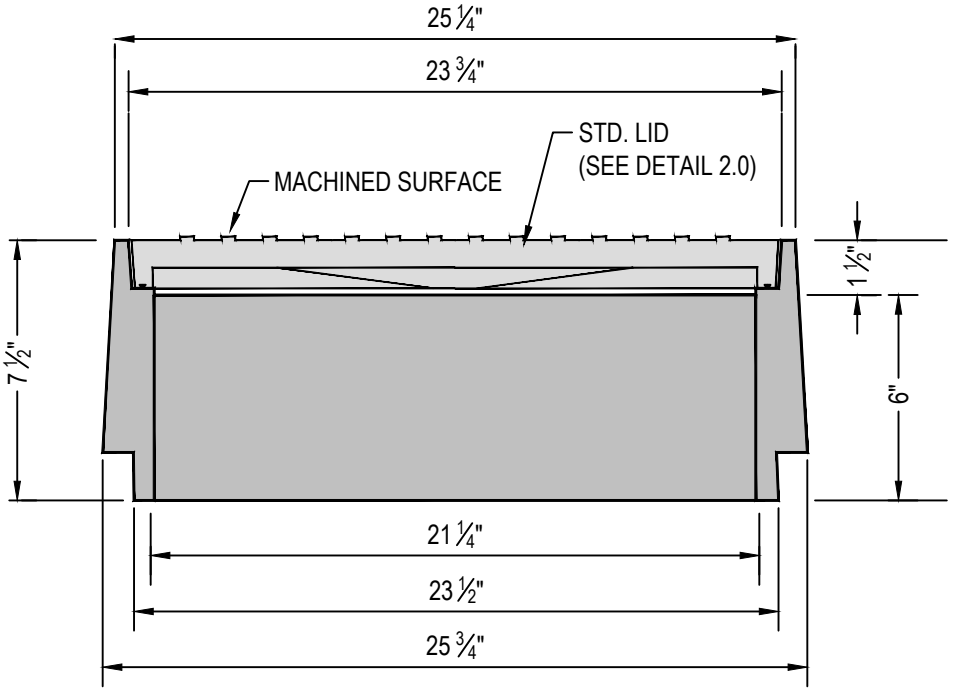
LITTLE ROCK
Water Reclamation Authority
ONE WATER. ONE FUTURE.

4 INCH RING EXTENSION DETAIL

2.1.B

Prepared By: Jeremy West
Updated: 7/13/2023 2:11:54 PM
Drawing Status: **APPROVED**
Filename: 2.1B.dwg





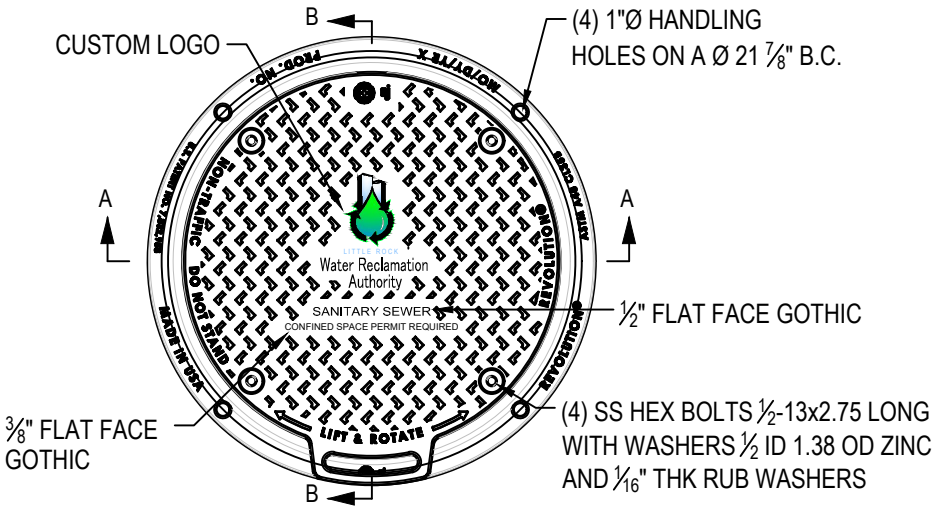
CASTING SHALL BE "MADE IN USA"

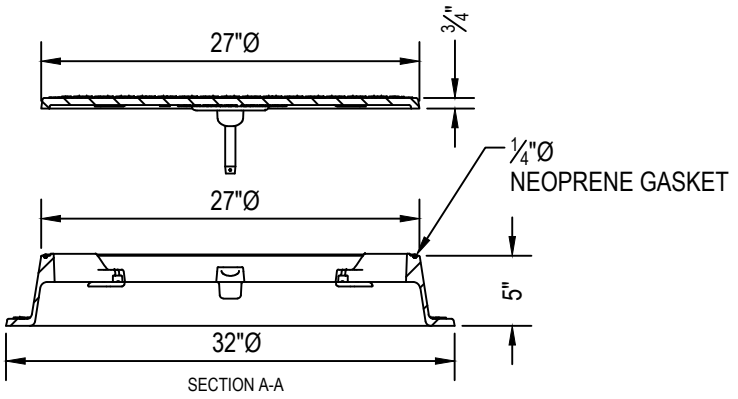
LITTLE ROCK
Water Reclamation Authority
ONE WATER. ONE FUTURE.

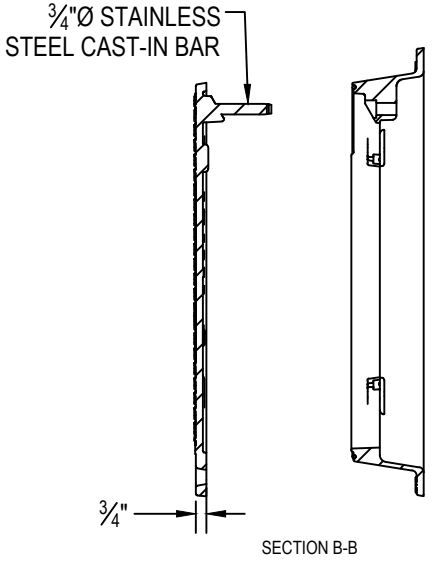
6 INCH RING EXTENSION DETAIL

2.1.C

Prepared By: Jeremy West
Updated: 7/13/2023 2:11:50 PM
Drawing Status: **APPROVED**
Filename: 2.1C.dwg







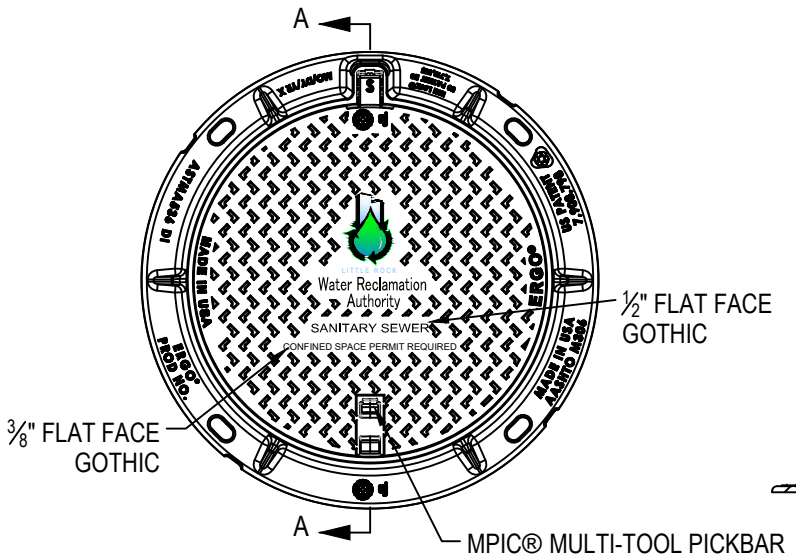
LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

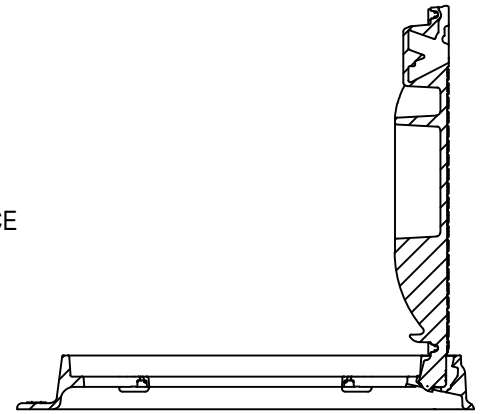
24 INCH REVOLUTION STYLE MANHOLE COVER ASSEMBLY RING AND LID

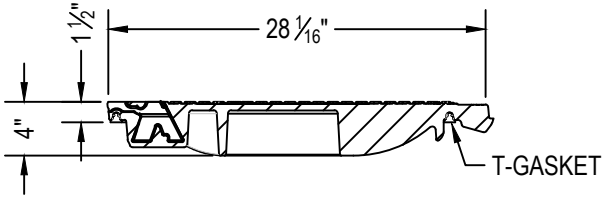
2.2A

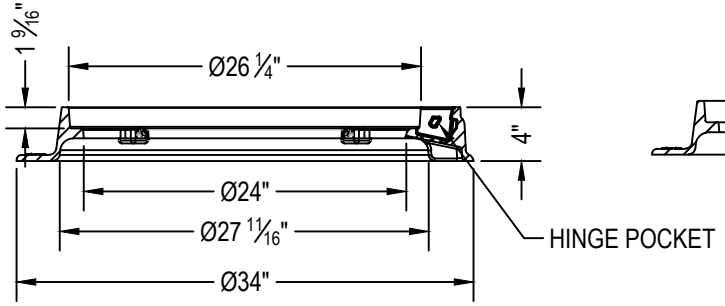
Prepared By: Jeremy West
Updated: 7/13/2023 2:11:46 PM
Drawing Status: **APPROVED**
Filename: 2.2A.dwg

NOTE:
LID SHALL BE CAST IN DUCTILE IRON.

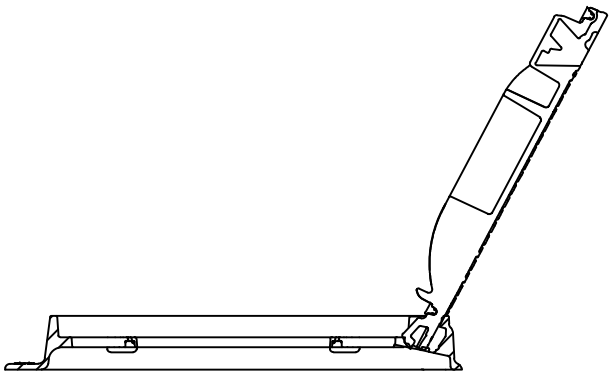



SAFETY LOCK @ 90°





SECTION A-A

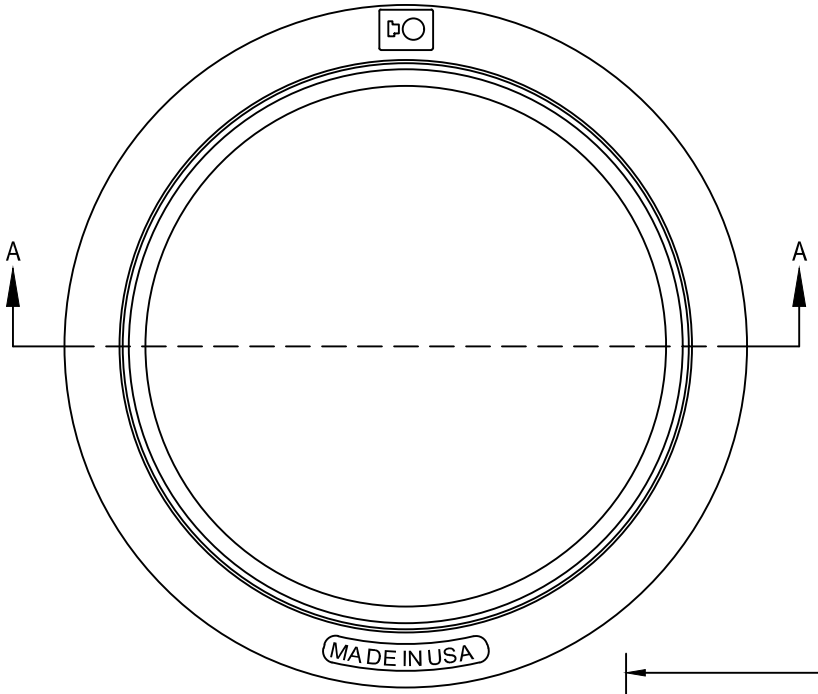

FULLY OPENED @ 120°

LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

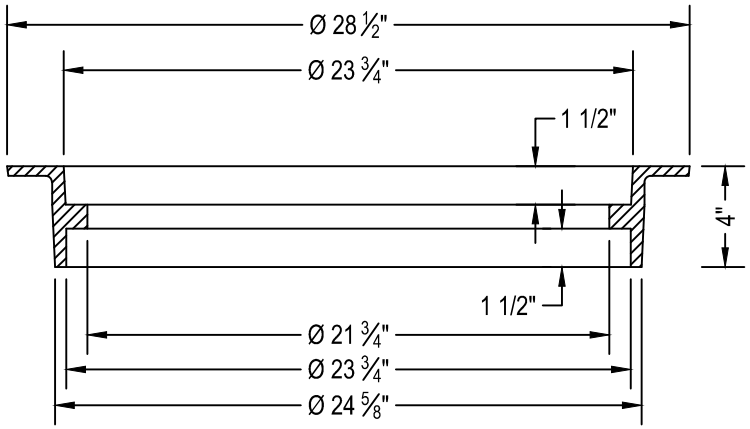
HINGED "ERGO" MANHOLE ASSEMBLY
24 INCH RING AND LID

2.3

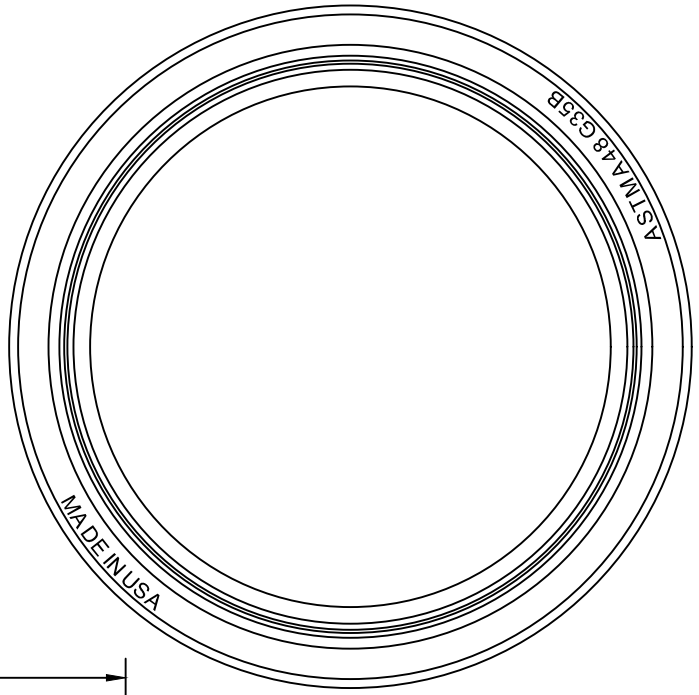
Prepared By: Scott Taylor
Updated: 7/13/2023 2:11:42 PM
Drawing Status: **APPROVED**
Filename: 2.3.dwg



RING TOP FLANGE VIEW



SECTION A-A



RING BOTTOM FLANGE VIEW

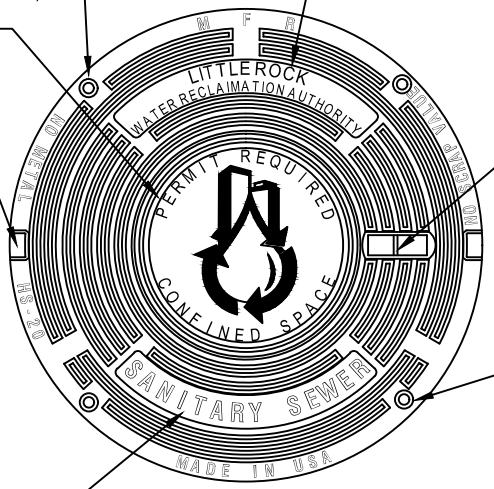
NOTE: FRAME IS REVERSIBLE.

LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

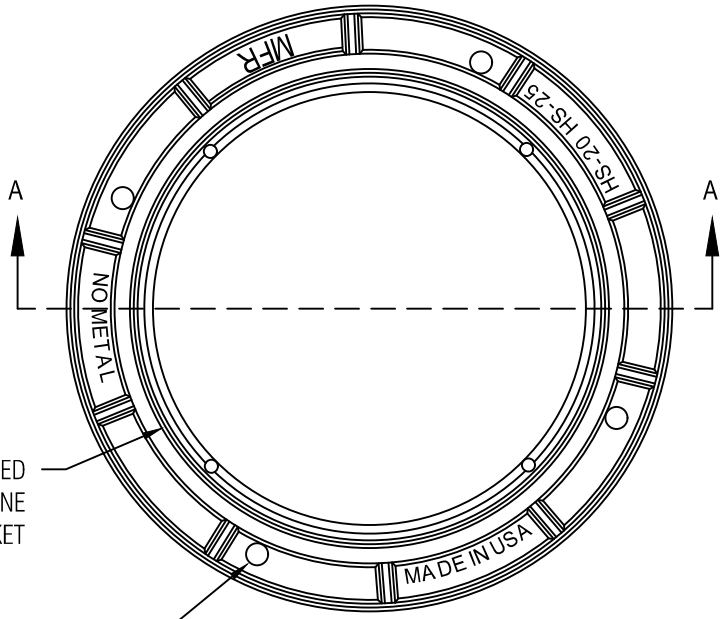
24" REVERSIBLE MANHOLE COVER ASSEMBLY RING AND LID

2.4

Prepared By: Jeremy West
Updated: 7/13/2023 2:11:37 PM
Drawing Status: **APPROVED**
Filename: 2.4.dwg

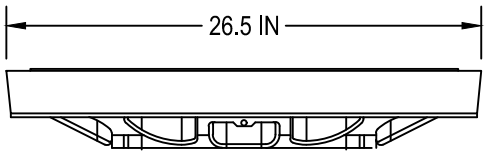


COVER
COLOR = BLACK
WEIGHT = 80 LBS

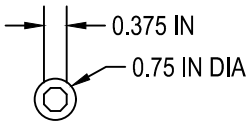


FRAME
COLOR = BLACK
WEIGHT = 47 LBS

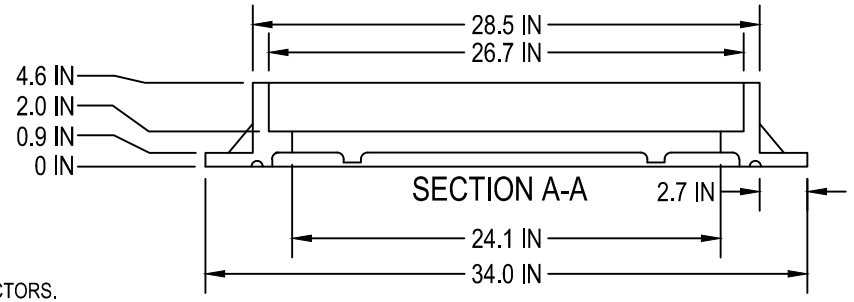
THIS ASSEMBLY SHALL ONLY BE USED IN SPECIAL CIRCUMSTANCES, WITH LRWRA APPROVAL.



COVER SIDE



⅜" ALLEN
FASTENERS ARE ½ - 13 UNC. 3.5 IN LONG
SHCS FASTENER



FRAME SECTION

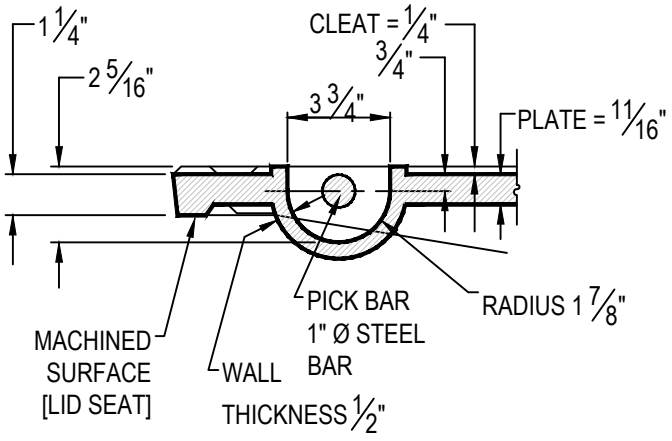
1. ALL HARDWARE IS 316 STAINLESS STEEL.
2. DETECTABLE BY STANDARD METAL DETECTORS.
3. COMPRESSION MOLDED THERMOSET COMPOSITE - NO METAL REINFORCEMENT.
4. PASSED M306 H20/H25 PROOF LOAD.
5. WATERTIGHT (0.0 GPM)
6. ALL ACTUAL WEIGHTS AND DIMENSIONS ARE ±5% OF DRAWING.

LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

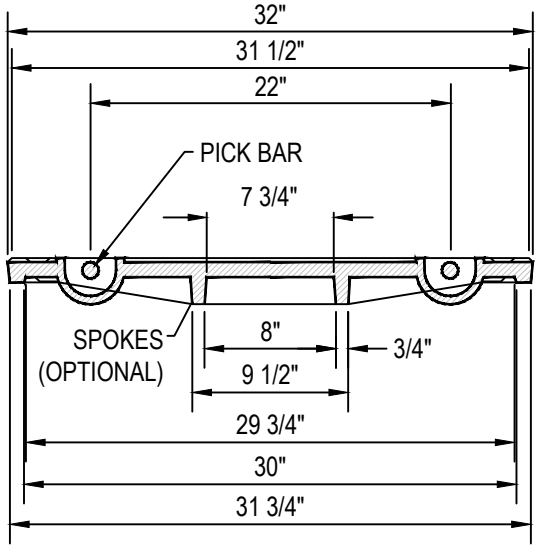
24" COMPOSITE MANHOLE COVER ASSEMBLY RING AND LID

2.5

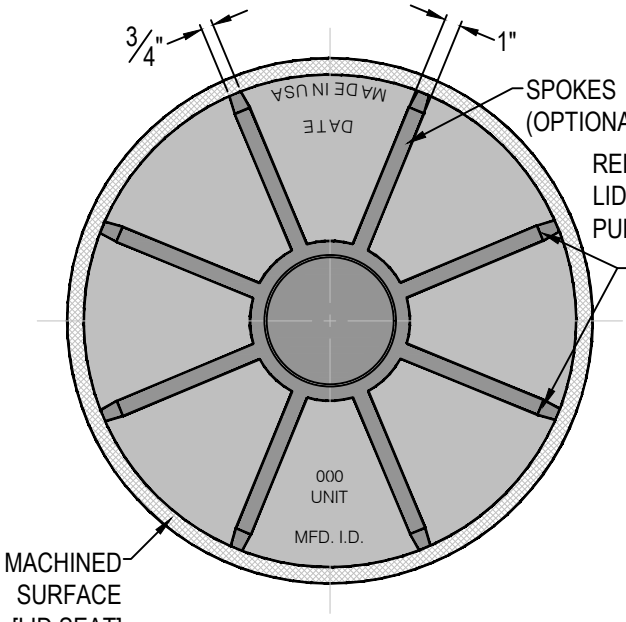
Prepared By: Jeremy West
Updated: 8/28/2023 9:36:38 AM
Drawing Status: **APPROVED**
Filename: 2.5.dwg



PICK BAR DETAIL



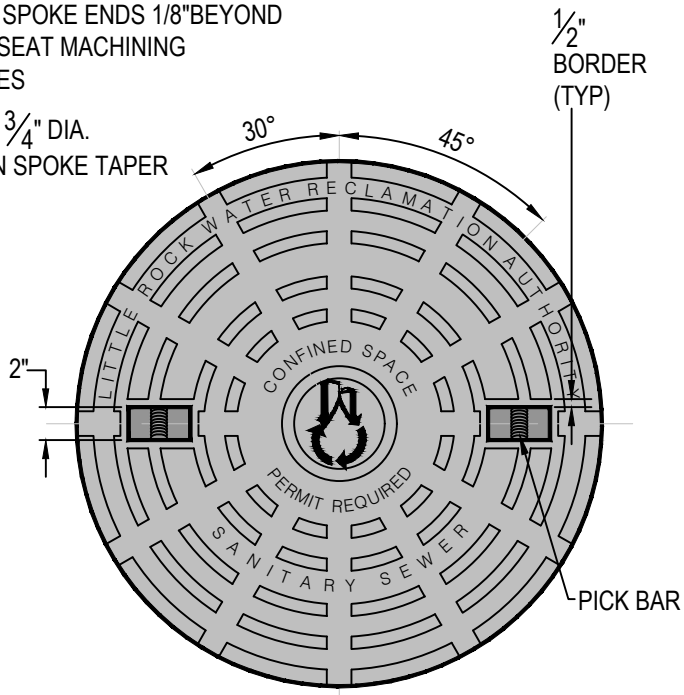
LID SECTION



RELIEVE SPOKE ENDS 1/8"BEYOND LID FOR SEAT MACHINING PURPOSES

AT 27 3/4" DIA. BEGIN SPOKE TAPER

LID BOTTOM VIEW



LID TOP VIEW

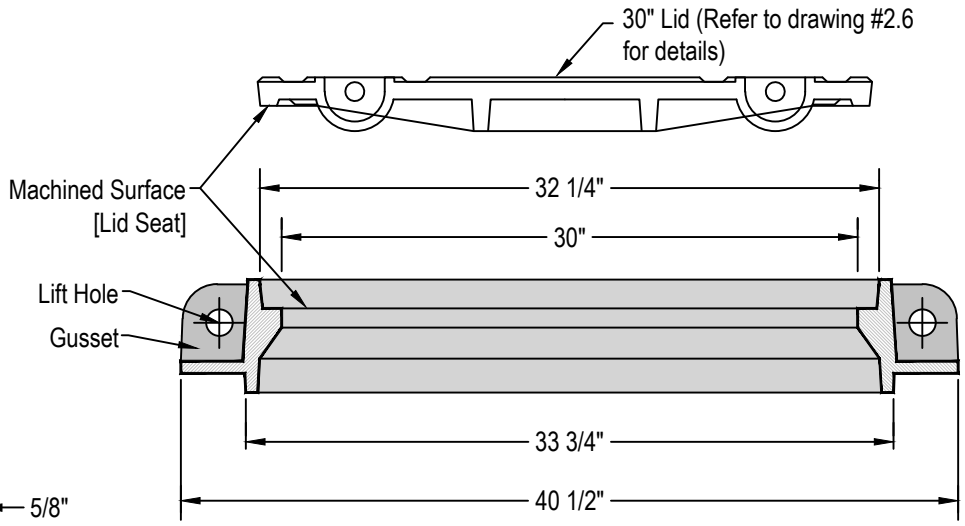
1. CASTINGS SHALL BE MADE IN THE U.S.A.
2. ALL CORNERS AND EDGES SHALL HAVE A 1" MIN. RADIUS.
3. LIDS SHALL BE CAST WITH TWO 1" DIA. STEEL PICK BARS.
4. LID WEIGHTS SHALL BE 210 LBS FOR CAST IRON OR 175 LBS. FOR DUCTILE IRON.
5. WEIGHT SHALL BE CAST ON BOTH THE TOP AND BOTTOM OF THE LID.
6. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 40,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
7. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

LITTLE ROCK Water Reclamation Authority
ONE WATER. ONE FUTURE.

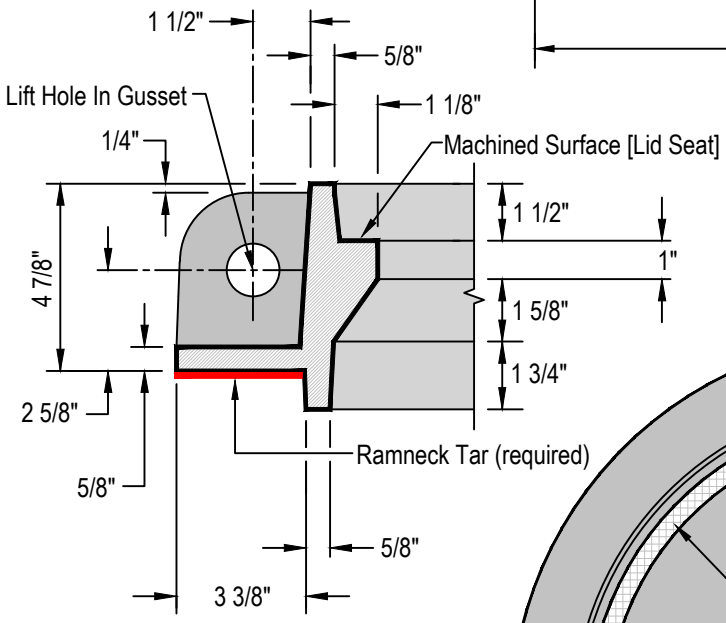
30 INCH MANHOLE LID DETAILS

2.6

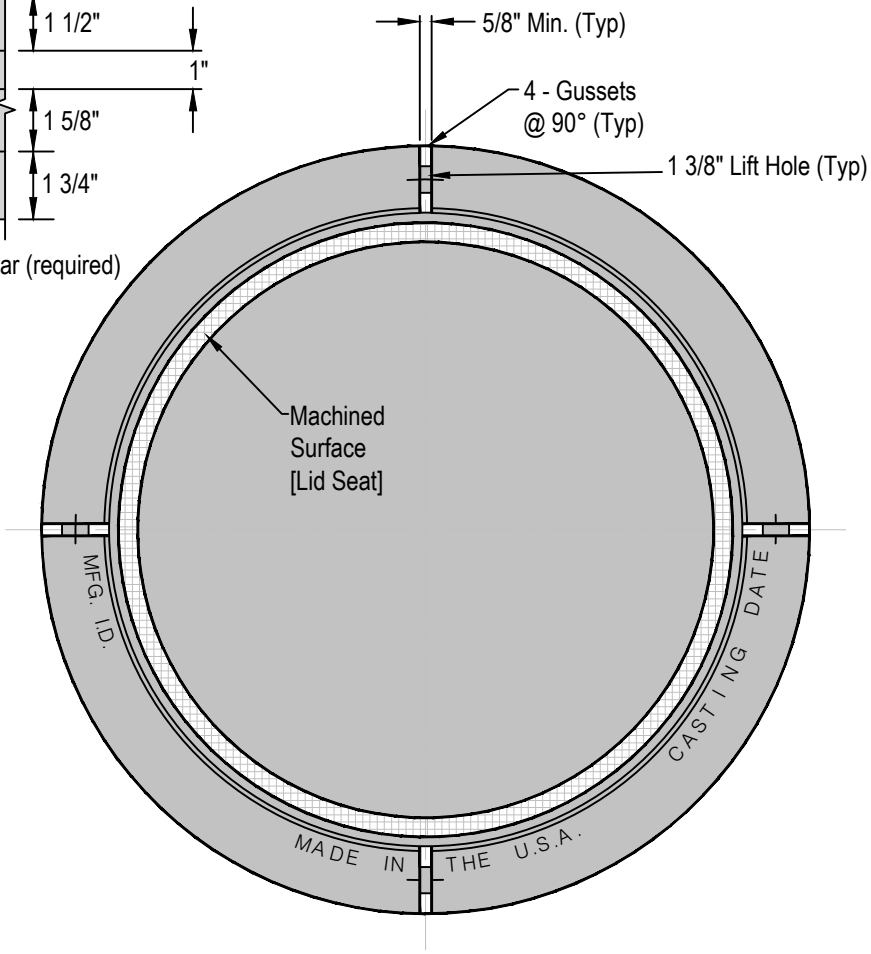
Prepared By: Scott Taylor
Updated: 7/13/2023 2:11:28 PM
Drawing Status: **APPROVED**
Filename: 2.6.dwg



RING SECTION



LIFT HOLE DETAIL



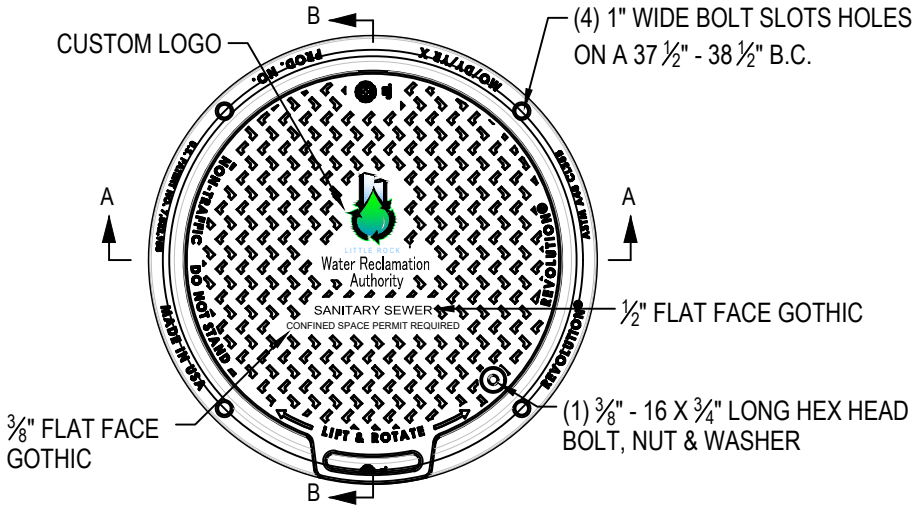
RING

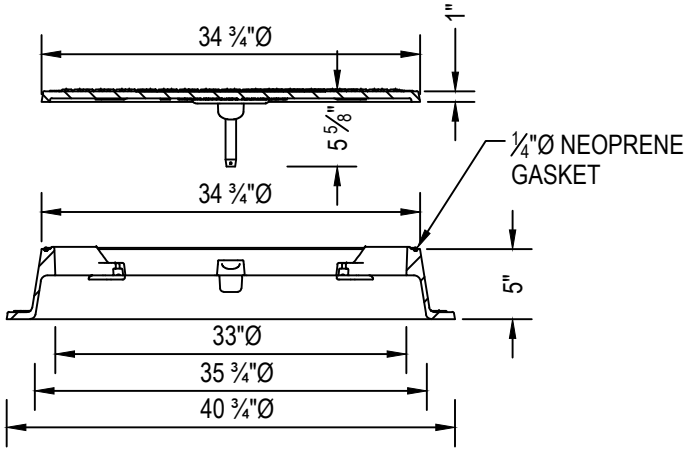
LITTLE ROCK Water Reclamation Authority
ONE WATER. ONE FUTURE.

30 INCH MANHOLE RING DETAILS

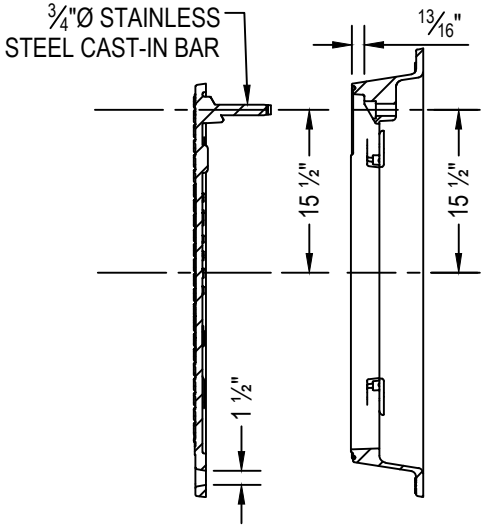
2.7

Prepared By: Scott Taylor
Updated: 7/13/2023 1:45:03 PM
Drawing Status: **APPROVED**
Filename: 2.7.dwg





SECTION A-A



SECTION B-B

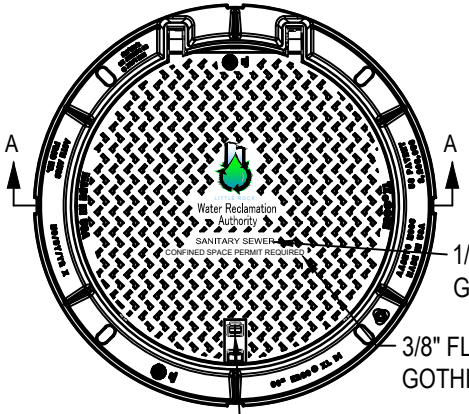
LITTLE ROCK
Water Reclamation
Authority
ONE WATER. ONE FUTURE.

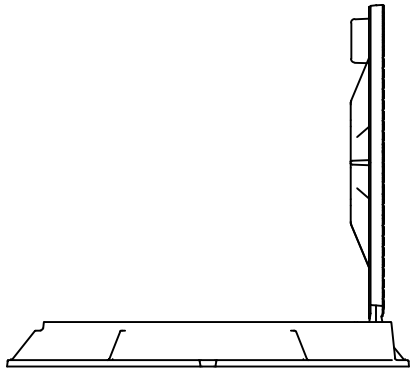
30 INCH REVOLUTION STYLE MANHOLE COVER ASSEMBLY RING AND LID

2.8

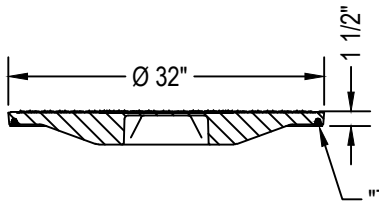
Prepared By: Jeremy West
Updated: 7/13/2023 2:11:21 PM
Drawing Status: **APPROVED**
Filename: 2.8.dwg

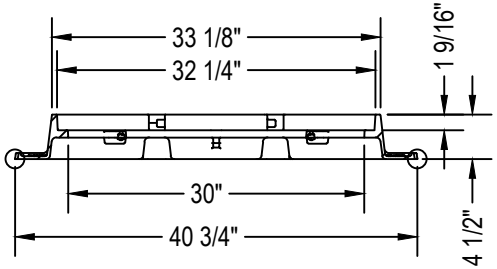
NOTE:
LID SHALL BE CAST IN DUCTILE IRON.





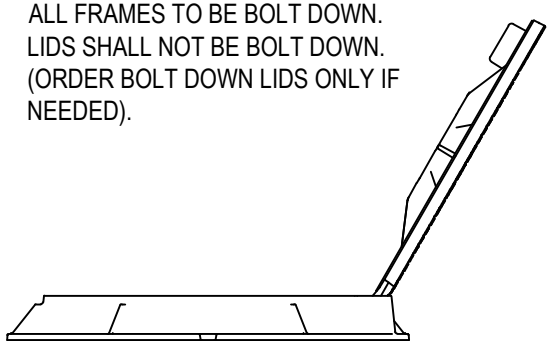
SAFETY LOCK & REMOVAL POSITION AT 90°





SECTION A-A

NOTE:
ALL FRAMES TO BE BOLT DOWN.
LIDS SHALL NOT BE BOLT DOWN.
(ORDER BOLT DOWN LIDS ONLY IF NEEDED).



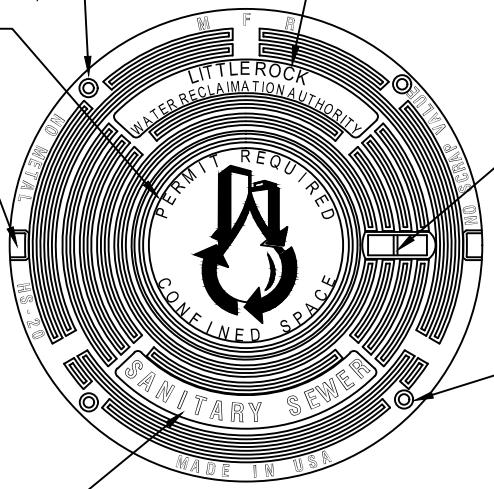
FULLY OPENED POSITION AT 120°

LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

HINGED "ERGO XL" MANHOLE ASSEMBLY
30 INCH RING AND LID

2.9

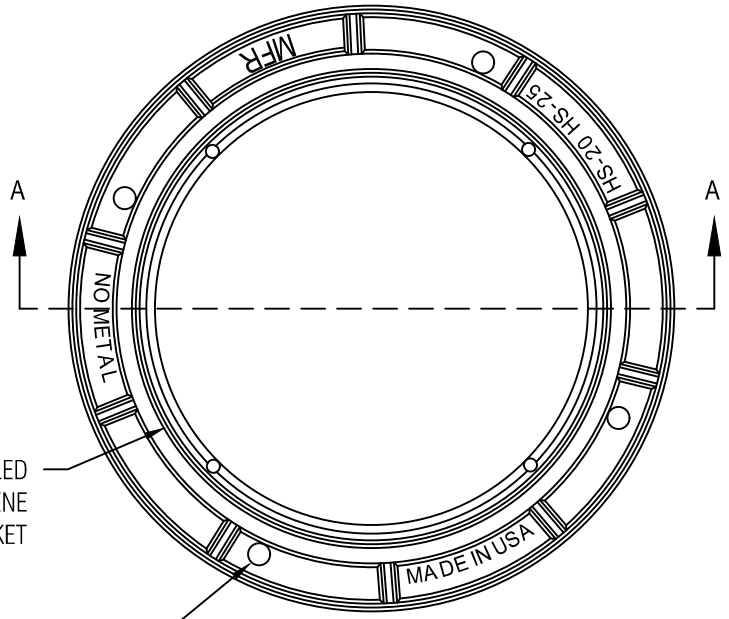
Prepared By: Scott Taylor
Updated: 7/13/2023 2:11:17 PM
Drawing Status: **APPROVED**
Filename: 2.9.dwg



COVER

COLOR = BLACK

WEIGHT = 103 LBS

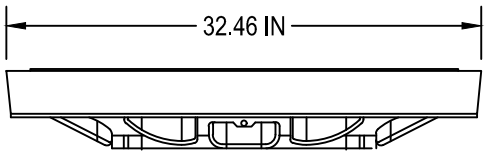


FRAME

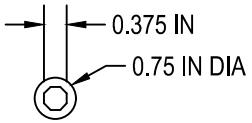
COLOR = BLACK

WEIGHT = 58 LBS

THIS ASSEMBLY SHALL ONLY BE USED IN SPECIAL CIRCUMSTANCES, WITH LRWRA APPROVAL.



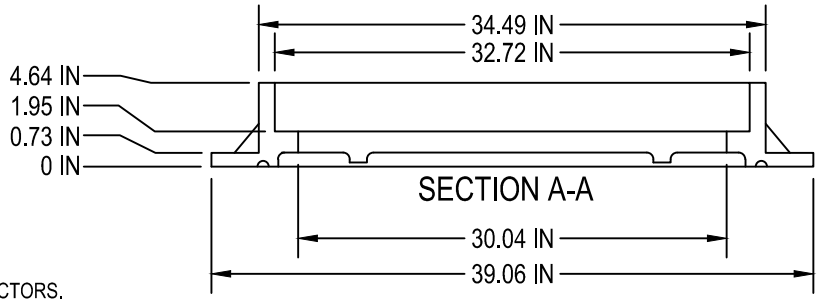
COVER SIDE



⅜" ALLEN

FASTENERS ARE ½ - 13 UNC. 3.5 IN LONG

SHCS FASTENER



FRAME SECTION

1. ALL HARDWARE IS 316 STAINLESS STEEL.
2. DETECTABLE BY STANDARD METAL DETECTORS.
3. COMPRESSION MOLDED THERMOSET COMPOSITE - NO METAL REINFORCEMENT.
4. PASSED M306 H20/H25 PROOF LOAD.
5. WATERTIGHT (0.0 GPM)
6. ALL ACTUAL WEIGHTS AND DIMENSIONS ARE ±5% OF DRAWING.

LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

30" COMPOSITE MANHOLE COVER ASSEMBLY RING AND LID

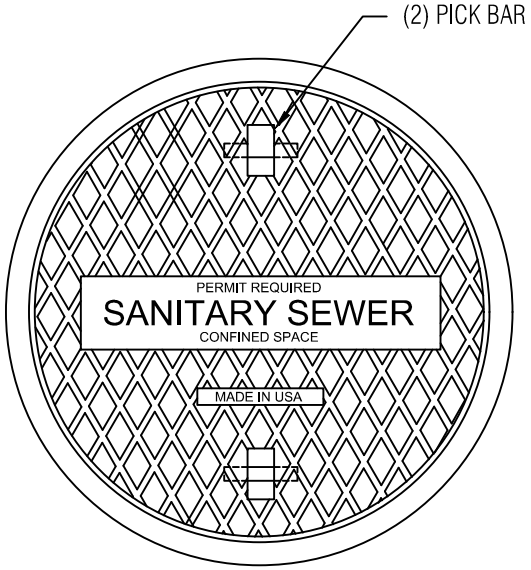
2.10

Prepared By: Jeremy West

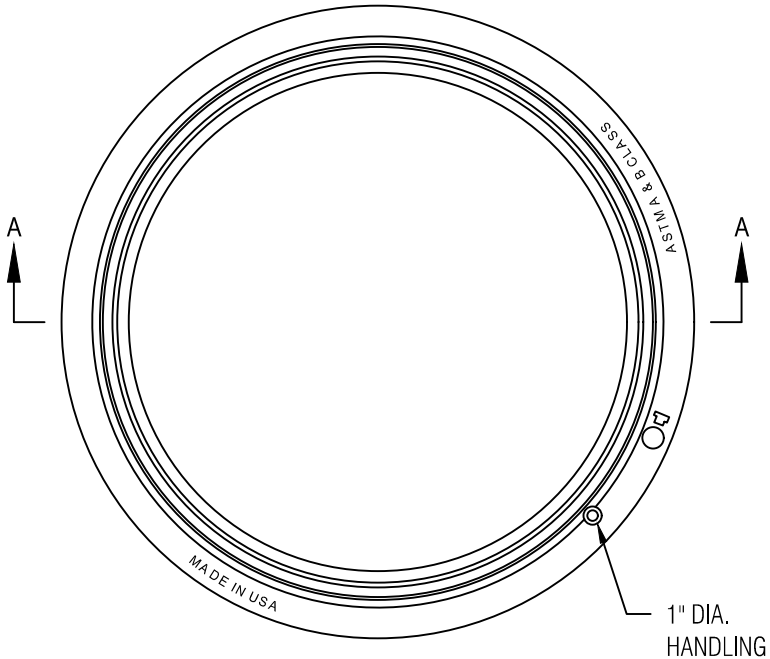
Updated: 8/28/2023 9:35:35 AM

Drawing Status: **APPROVED**

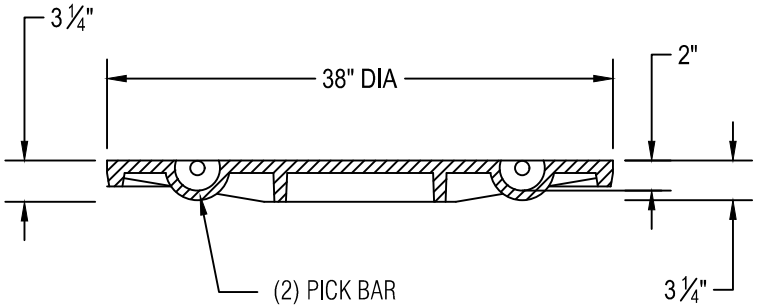
Filename: 2.10.dwg



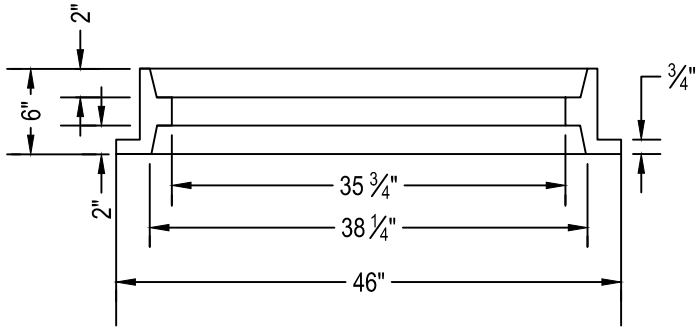
COVER



FRAME



COVER SECTION



SECTION A-A

NOTE:

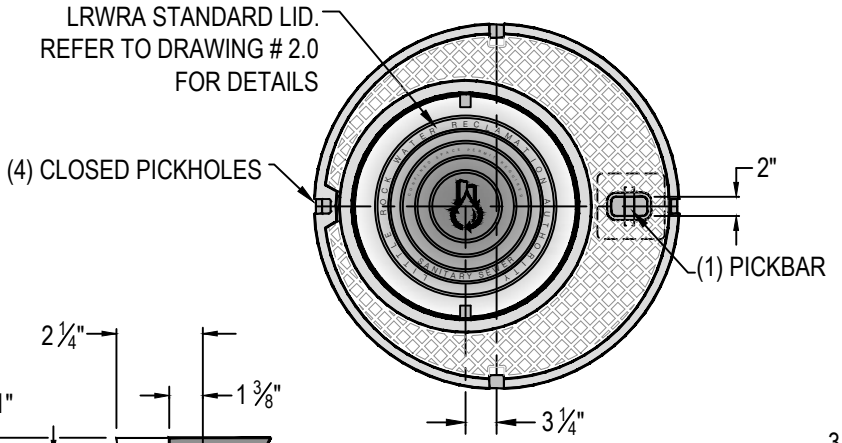
All Castings Shall Be "Made In USA"

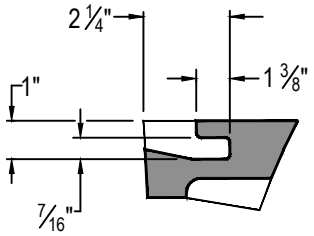
LITTLE ROCK
Water Reclamation Authority
ONE WATER, ONE FUTURE.

36" MANHOLE COVER ASSEMBLY RING AND LID

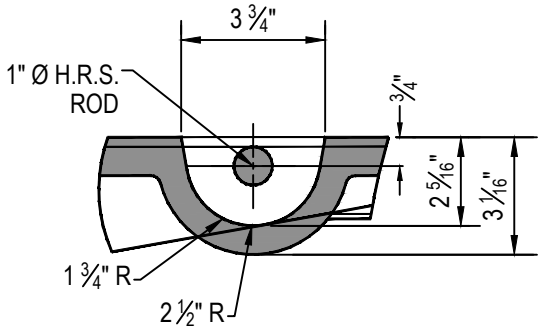
2.11

Prepared By: Jeremy West
Updated: 7/13/2023 2:11:07 PM
Drawing Status: **APPROVED**
Filename: 2.11.dwg

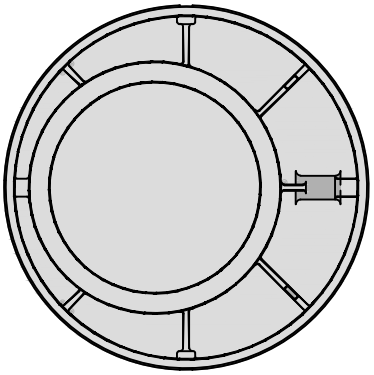




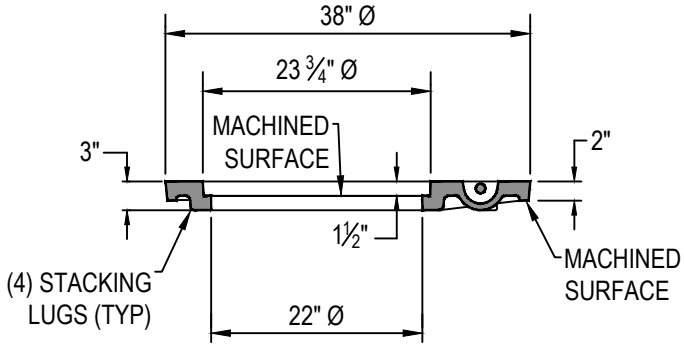
PICKHOLE DETAIL



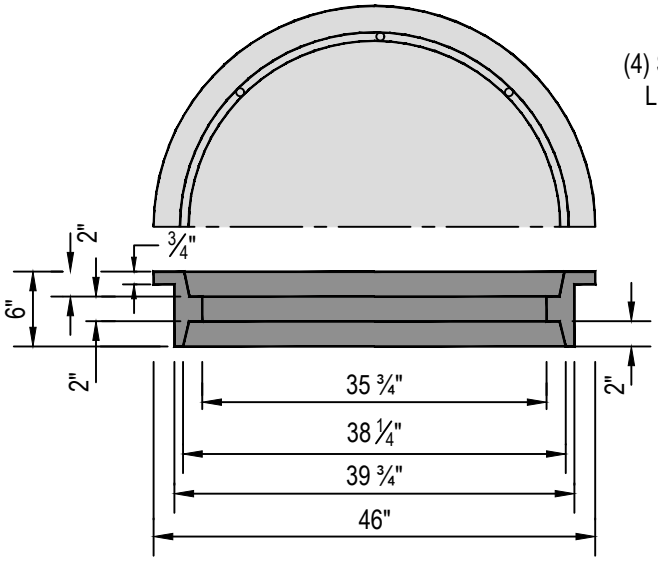
PICKBAR DETAIL



LID BACK



LID SECTION



REVERSIBLE FRAME

EST. WEIGHT
360 POUNDS

NOTE:

All Castings Shall Be "Made In USA"

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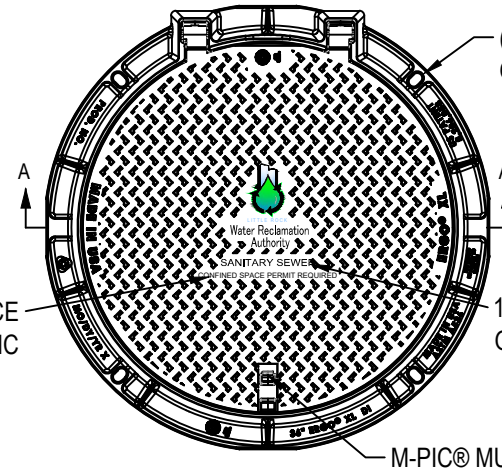
36 INCH REVERSIBLE FRAME AND LID DETAILS

2.12

Prepared By: Scott Taylor
Updated: 7/13/2023 2:11:02 PM
Drawing Status: **APPROVED**
Filename: 2.12.dwg

NOTE:
LID SHALL BE CAST IN DUCTILE IRON.

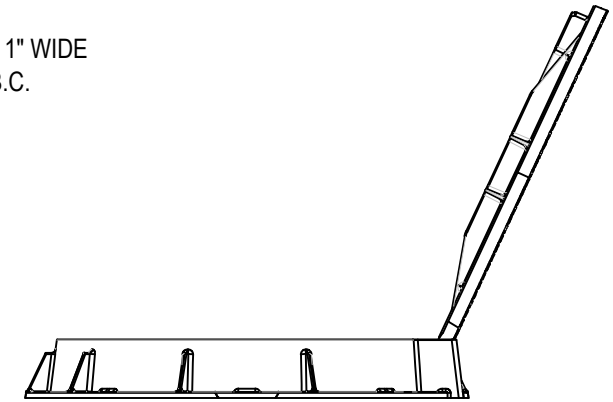


(4) BOLT SLOTS 1" WIDE ON A 42 1/2" Ø B.C.

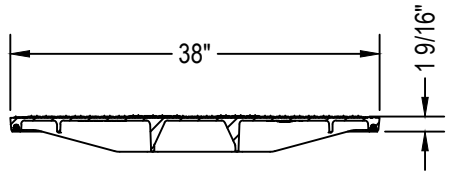
3/8" FLAT FACE GOTHIC

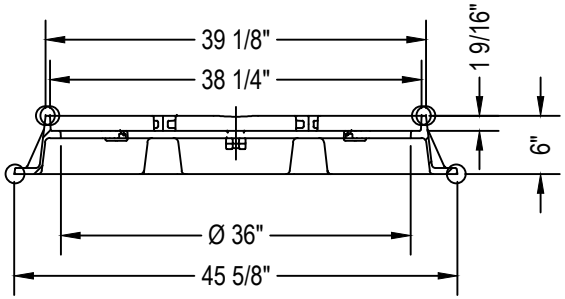
1/2" FLAT FACE GOTHIC

M-PIC® MULTI-TOOL PICKBAR

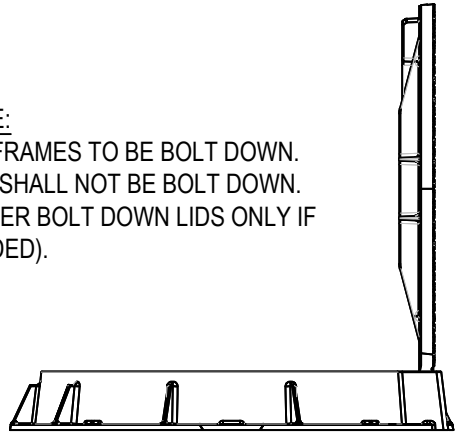


COVER IN 115° RESTING POSITION

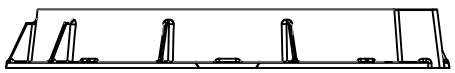




NOTE:
ALL FRAMES TO BE BOLT DOWN.
LIDS SHALL NOT BE BOLT DOWN.
(ORDER BOLT DOWN LIDS ONLY IF NEEDED).



COVER IN 90° LOCKED POSITION



REMOVE LIFT ASSIST & REMOVE COVER @ 90°

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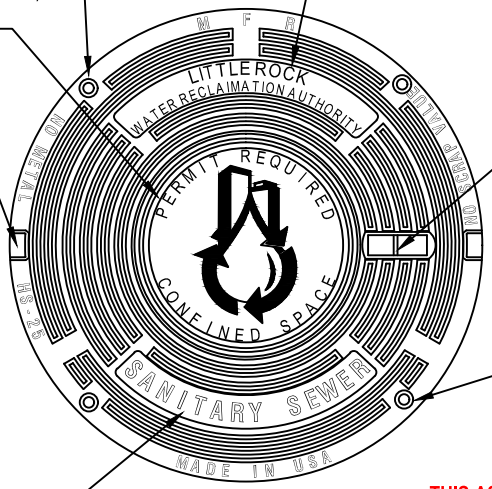
HINGED "ERGO XL" MANHOLE ASSEMBLY
36 INCH RING AND LID

2.13

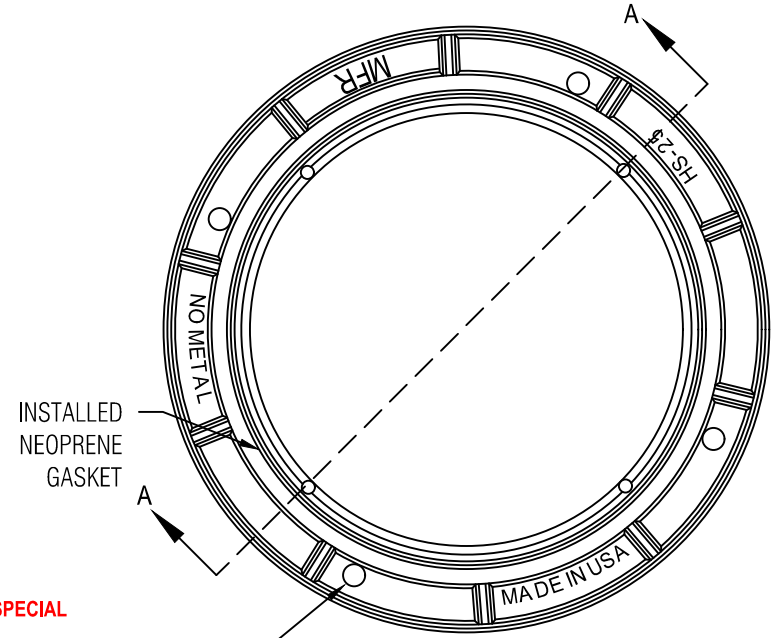
Prepared By: Scott Taylor
Updated: 7/13/2023 2:10:58 PM
Drawing Status: **APPROVED**
Filename: 2.13.dwg



COVER

COLOR = BLACK

WEIGHT = 170 LBS

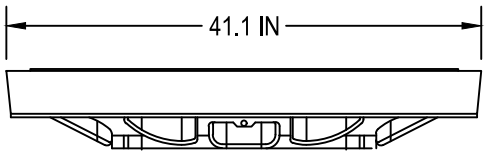


FRAME

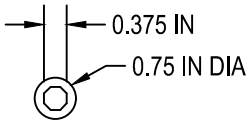
COLOR = BLACK

WEIGHT = 106 LBS

THIS ASSEMBLY SHALL ONLY BE USED IN SPECIAL CIRCUMSTANCES, WITH LRWRA APPROVAL.



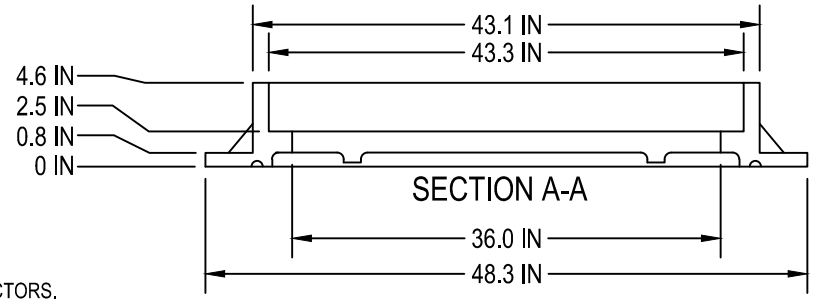
COVER SIDE



⅜" ALLEN

FASTENERS ARE ½ - 13 UNC. 3.5 IN LONG

SHCS FASTENER



FRAME SECTION

1. ALL HARDWARE IS 316 STAINLESS STEEL.
2. DETECTABLE BY STANDARD METAL DETECTORS.
3. COMPRESSION MOLDED THERMOSET COMPOSITE - NO METAL REINFORCEMENT.
4. PASSED M306 H20/H25 PROOF LOAD.
5. WATERTIGHT (0.0 GPM)
6. ALL ACTUAL WEIGHTS AND DIMENSIONS ARE ±5% OF DRAWING.

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36" COMPOSITE MANHOLE COVER ASSEMBLY RING AND LID

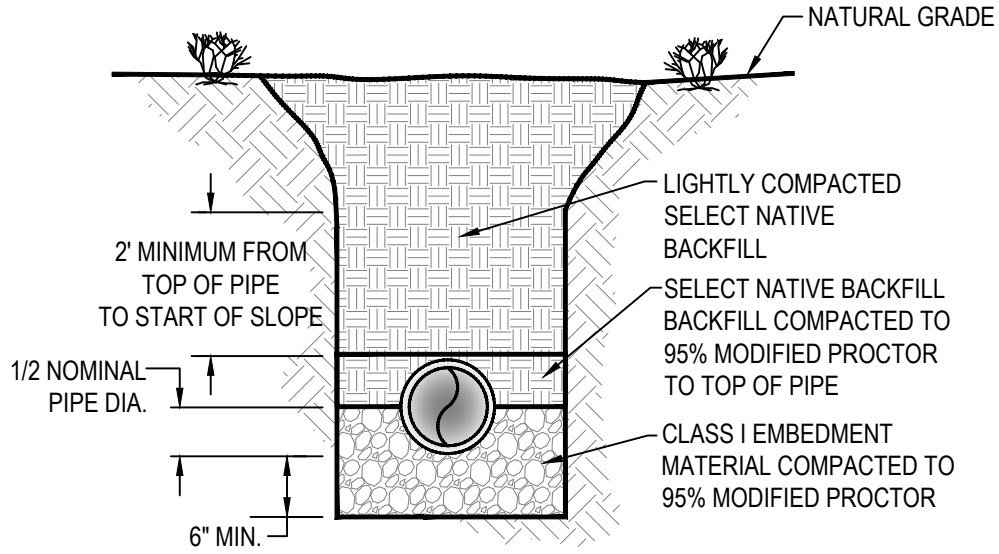
2.14

Prepared By: Jeremy West

Updated: 8/28/2023 9:36:25 AM

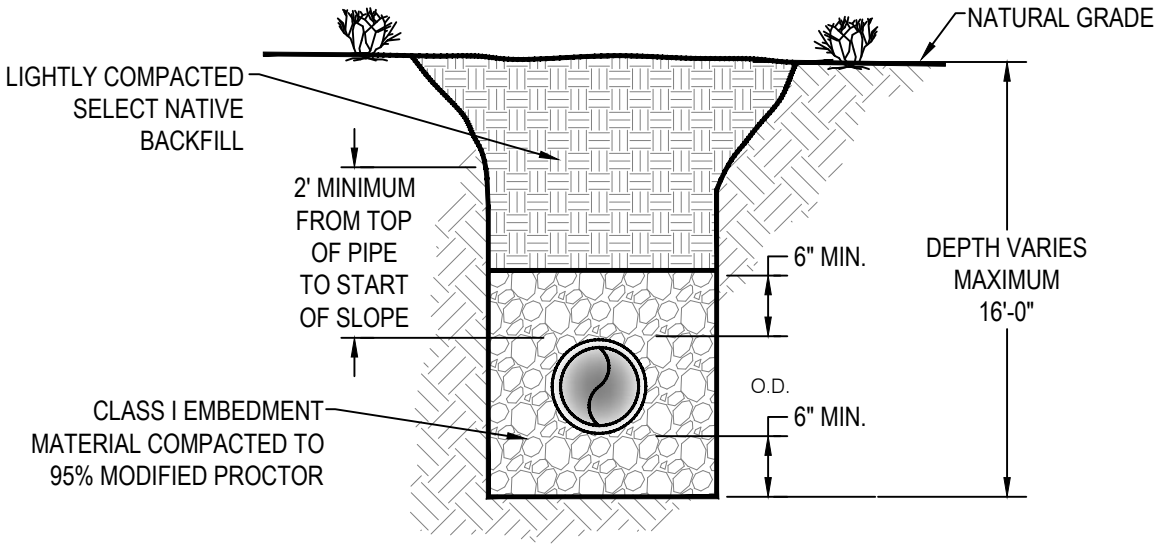
Drawing Status: **APPROVED**

Filename: 2.14.dwg



TYPICAL TRENCH DETAIL RIGID / SEMI-RIGID PIPE BEDDING

MAXIMUM WIDTH OF EXCAVATION FOR PIPE TRENCHES TABLE	
NOMINAL PIPE DIAMETER (INCHES)	MAX. WIDTH OF TRENCH FROM TOP OF PIPE TO 2' ABOVE TOP OF PIPE
6, 8, 10,	2'-6"
12, 14, 15, 16,	3'-0"
18, 21,	3'-6"
24, 30	4'-0"
36	4'-6"



TYPICAL TRENCH DETAIL FLEXIBLE PIPE BEDDING

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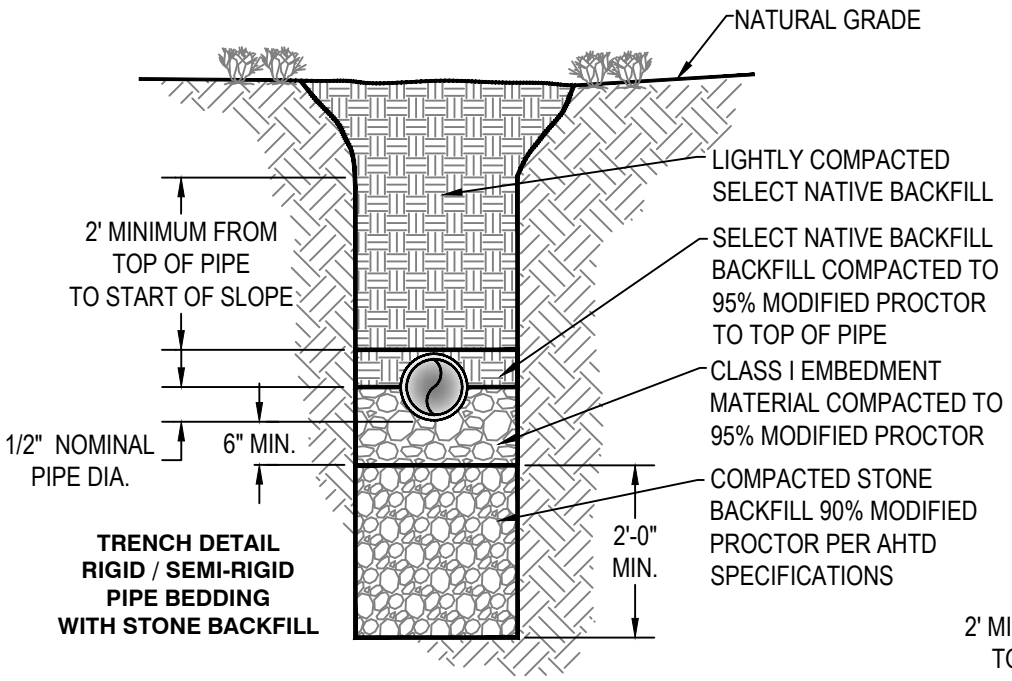
TYPICAL TRENCH BEDDING DETAILS FOR FLEXIBLE AND RIGID PIPE

3.0

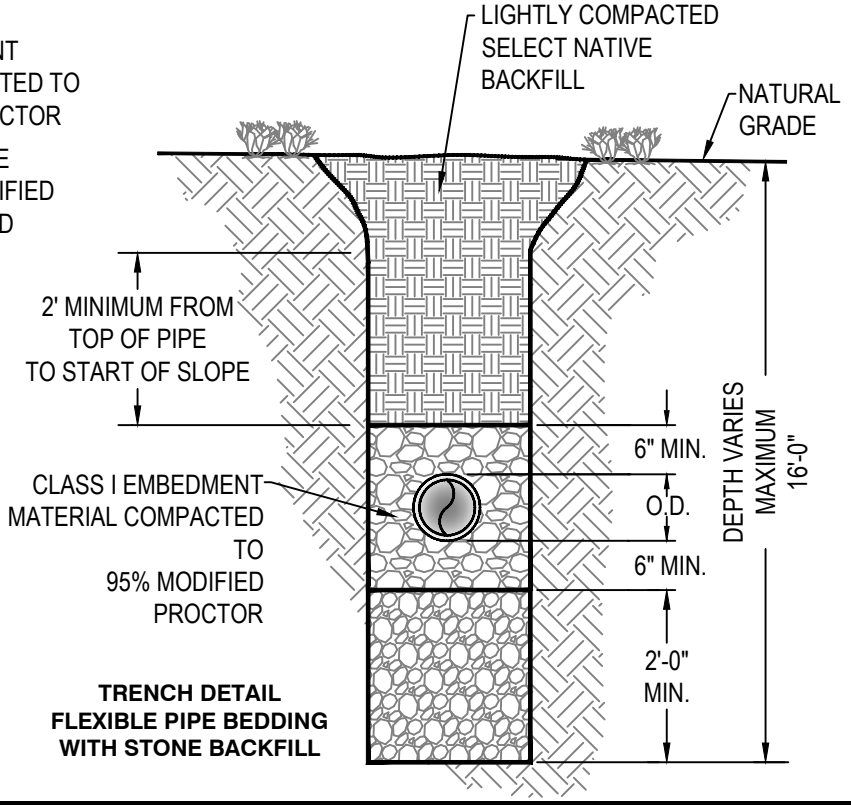
Prepared By: Scott Taylor
Updated: 8/2/2019 4:14:56 PM
Drawing Status: **APPROVED**
Filename: 3.0.dwg



TRENCH DETAIL RIGID / SEMI-RIGID PIPE BEDDING WITH STONE BACKFILL

MAXIMUM WIDTH OF EXCAVATION FOR PIPE TRENCHES TABLE

NOMINAL PIPE DIAMETER (INCHES)	MAX. WIDTH OF TRENCH FROM TOP OF PIPE TO 2' ABOVE TOP OF PIPE
6, 8, 10,	2'-6"
12, 14, 15, 16,	3'-0"
18, 21,	3'-6"
24, 30	4'-0"
36	4'-6"



TRENCH DETAIL FLEXIBLE PIPE BEDDING WITH STONE BACKFILL

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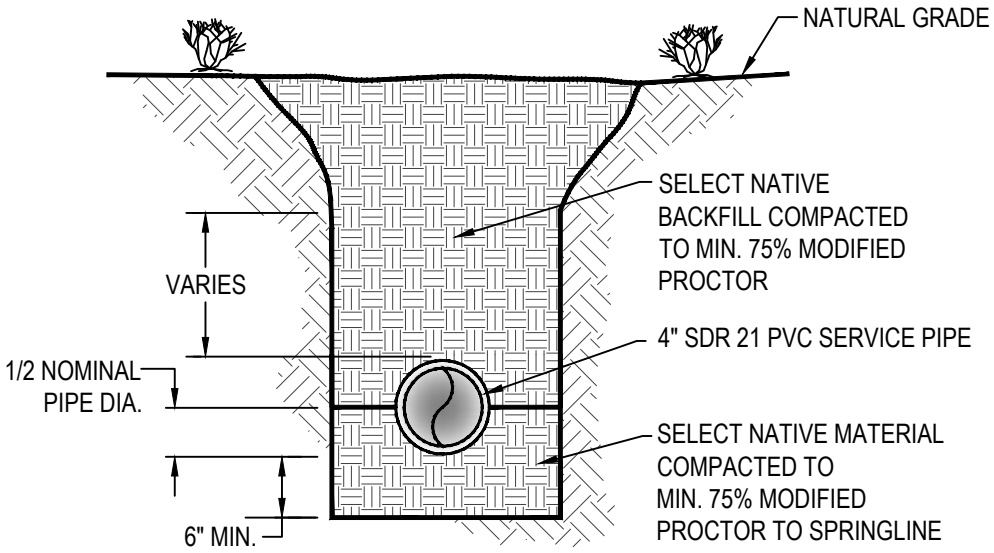
TRENCH BEDDING DETAILS FOR FLEXIBLE AND RIGID PIPE WITH STONE BACKFILL

3.1

Prepared By: Scott Taylor
Updated: 8/2/2019 4:19:36 PM
Drawing Status: **APPROVED**
Filename: 3.1.dwg



TRENCH DETAIL FOR 4" SDR 21 PVC IN UNPAVED AREAS

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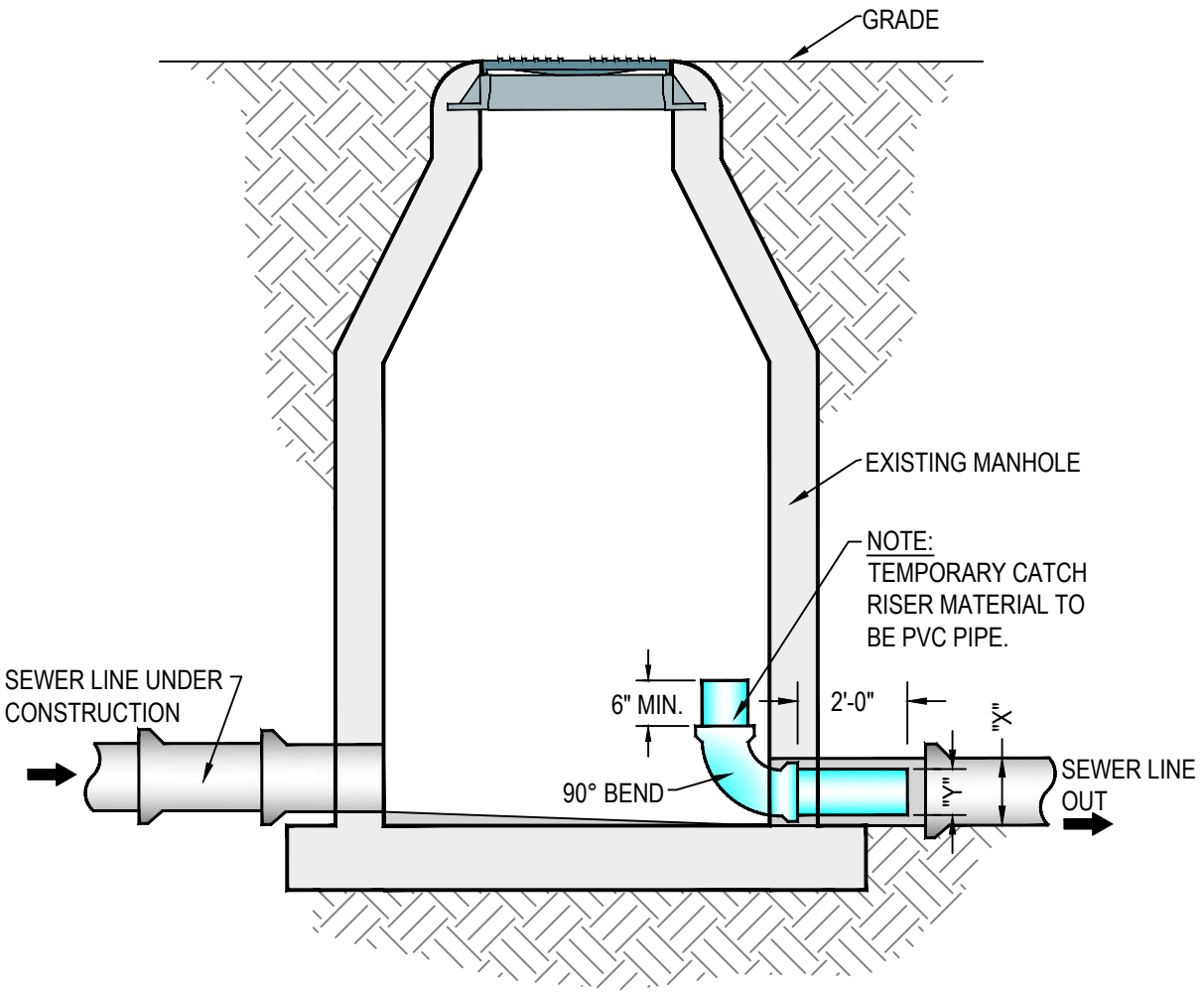
TRENCH BEDDING DETAILS FOR 4" SDR 21 PVC SERVICE PIPE

3.2

Prepared By: Scott Taylor
Updated: 12/18/2020 12:29:35 PM
Drawing Status: **APPROVED**
Filename: 3.2.dwg



"X"	"Y"
6"	4"
8"	6"
10"	8"
12"	10"
16"	15"

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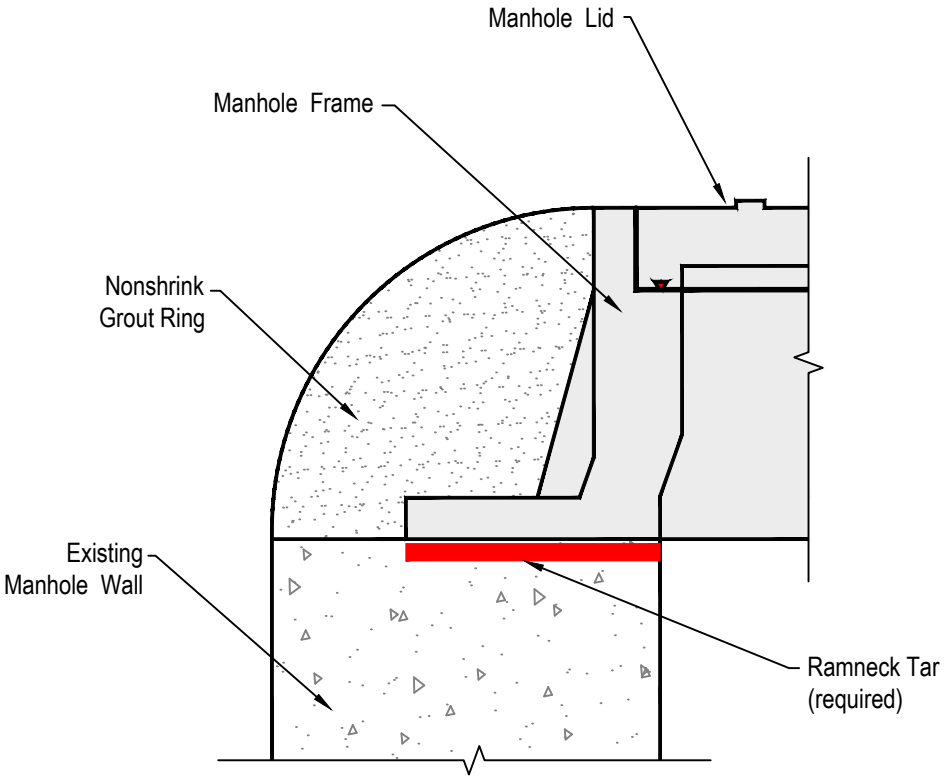
TEMPORARY DEBRIS CATCH RISER DETAIL AND TABLE

4.0

Prepared By: Scott Taylor
Updated: 7/29/2019 2:25:02 PM
Drawing Status: **APPROVED**
Filename: 4.0.dwg



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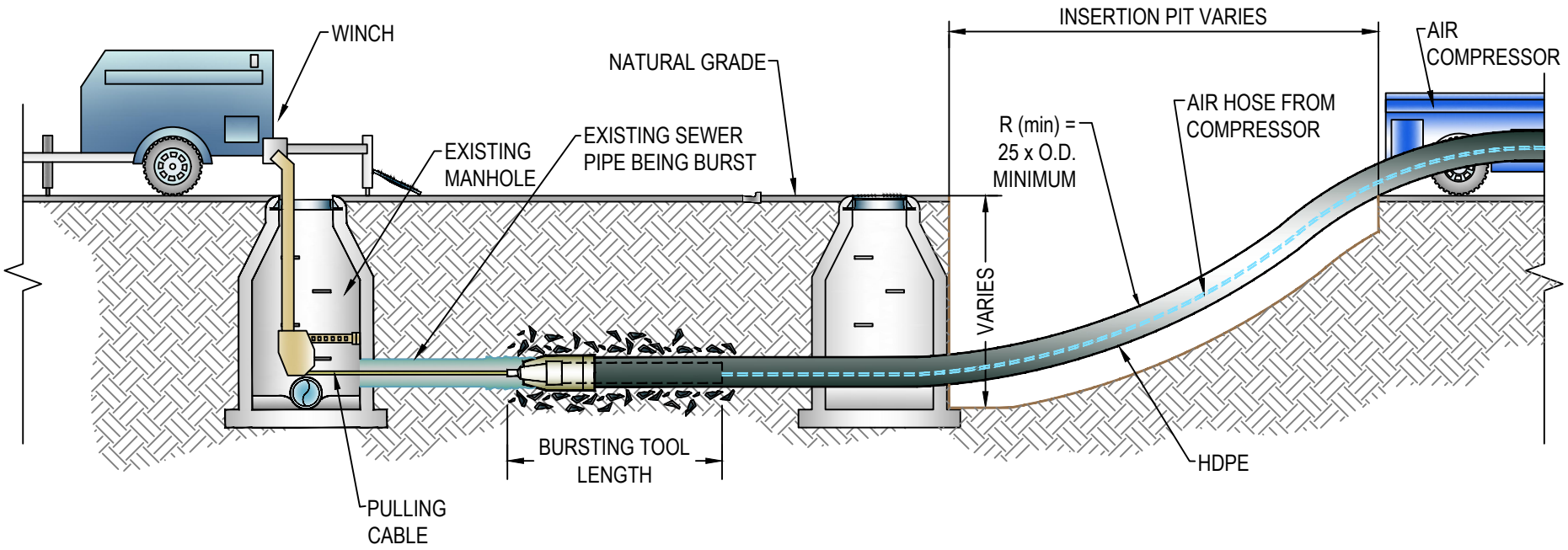
STANDARD MANHOLE FRAME REPLACEMENT DETAIL

4.1

Prepared By: Scott Taylor
Updated: 7/29/2019 2:26:44 PM
Drawing Status: **APPROVED**
Filename: 4.1.dwg



TYPICAL PIPE BURSTING OPERATION LAYOUT

- THE TOOL MUST BE LAUNCHED LEVEL.
- THE BOTTOM LENGTH OF THE INSERTION PIT BEFORE SLOPING UP TO THE NATURAL GRADE SHALL BE 2 TIMES THE LENGTH OF THE BURSTING TOOL, OR 12 TIMES THE PIPE DIAMETER, WHICHEVER IS GREATER.

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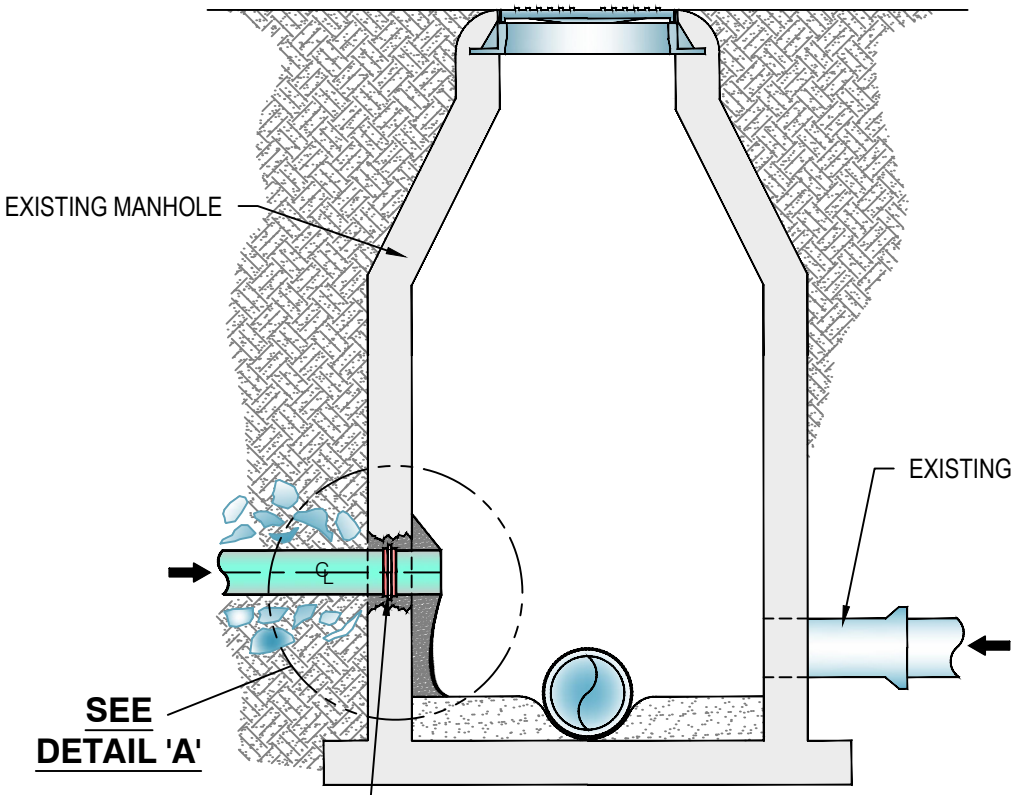
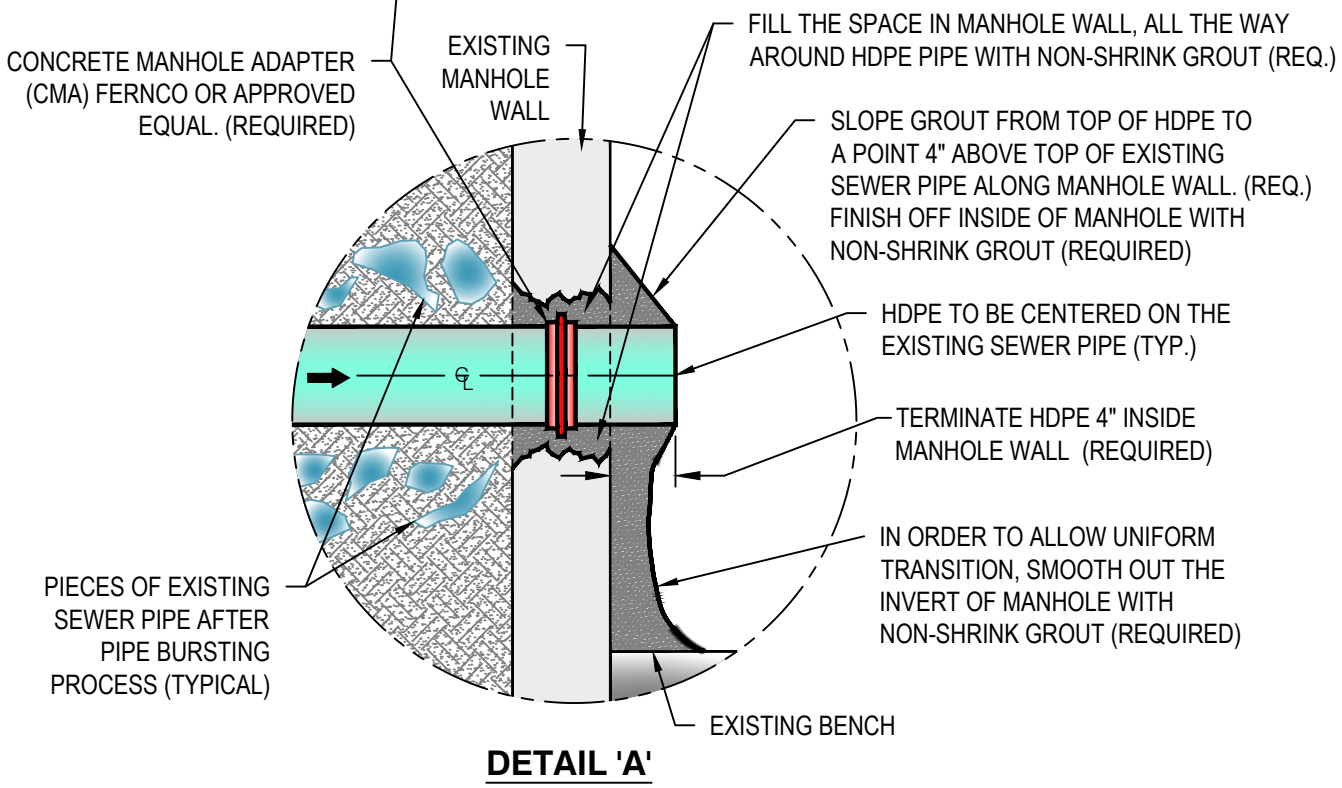
SEWER LINE REHABILITATION BY PIPE BURSTING WITH HDPE PIPE DETAILS

4.2

Prepared By: Scott Taylor
Updated: 8/2/2019 4:05:31 PM
Drawing Status: **APPROVED**
Filename: 4.2.dwg





DETAIL 'A'

LITTLE ROCK
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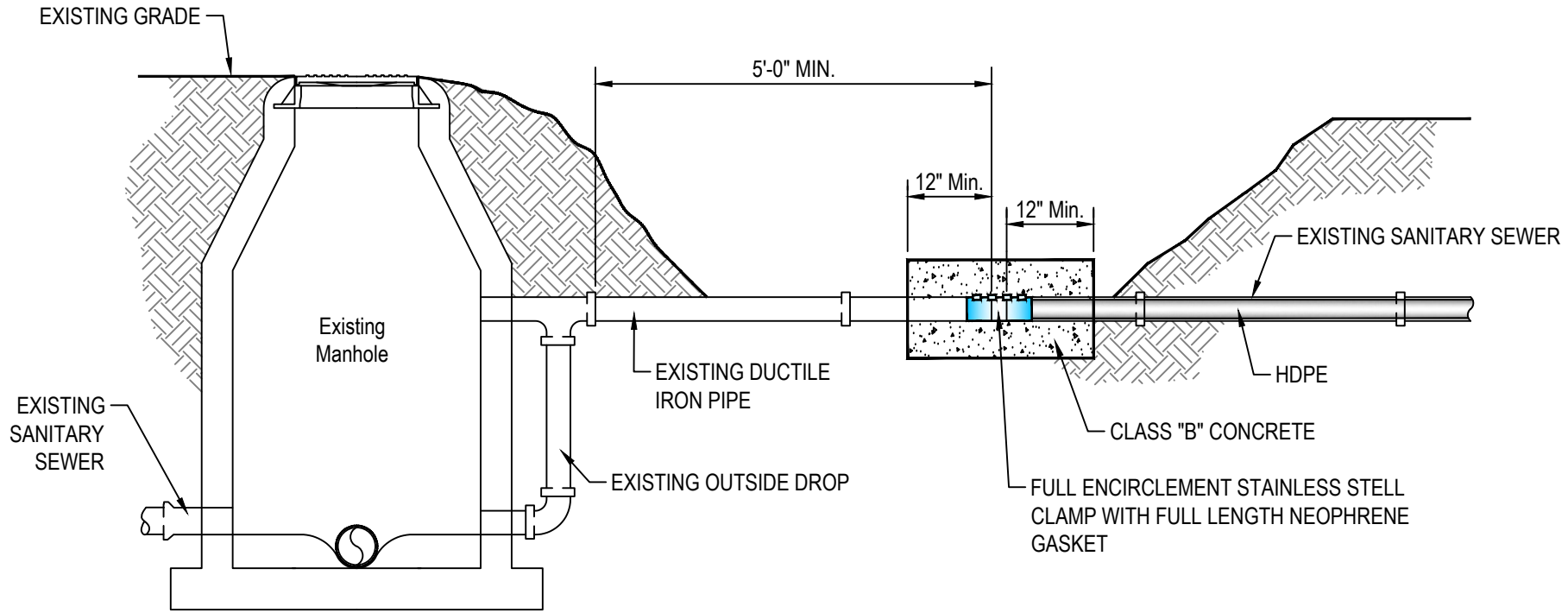
SEAL HDPE AT MANHOLE DETAILS

4.3

Prepared By: Scott Taylor
Updated: 7/29/2019 2:30:22 PM
Drawing Status: **APPROVED**
Filename: 4.3.dwg



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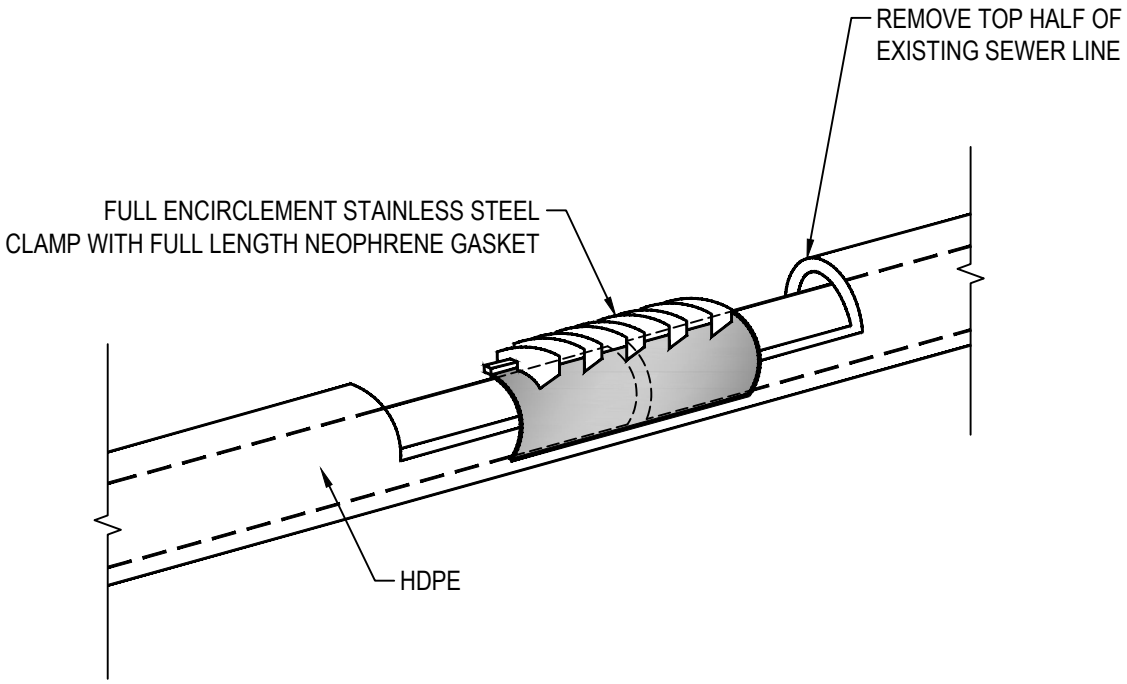
SEALING HDPE AT OUTSIDED DROPS DETAIL

4.4

Prepared By: Andy Stallings
Updated: 7/9/2019 5:19:40 PM
Drawing Status: **APPROVED**
Filename: 4.4.dwg



NOTES:

- EXPOSED HDPE AND CLAMP TO BE ENCASED WITH A 6" MINIMUM OF CLASS 'B' CONCRETE.
- JOINING THE TERMINAL ENDS OF THE HDPE TOGETHER IN THE TWO DIRECTION INSERTION PIT WITH MAXIMUM 1/2" GAP.

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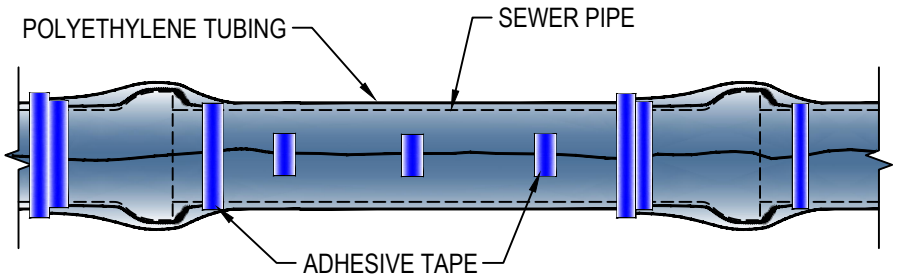
HDPE SPLICE DETAIL

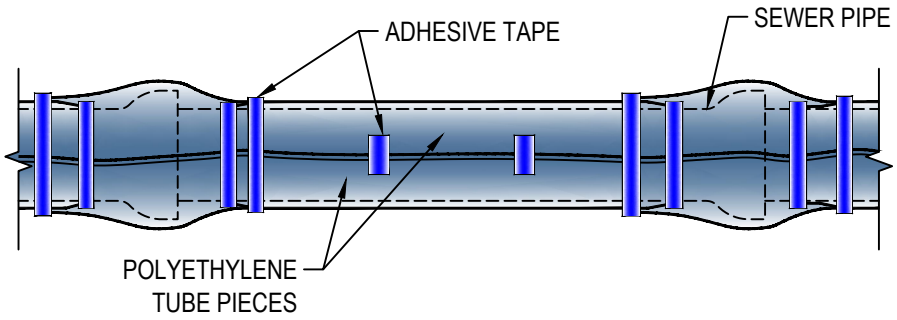
4.5

Prepared By: Scott Taylor
Updated: 7/29/2019 2:31:46 PM
Drawing Status: **APPROVED**
Filename: 4.5.dwg



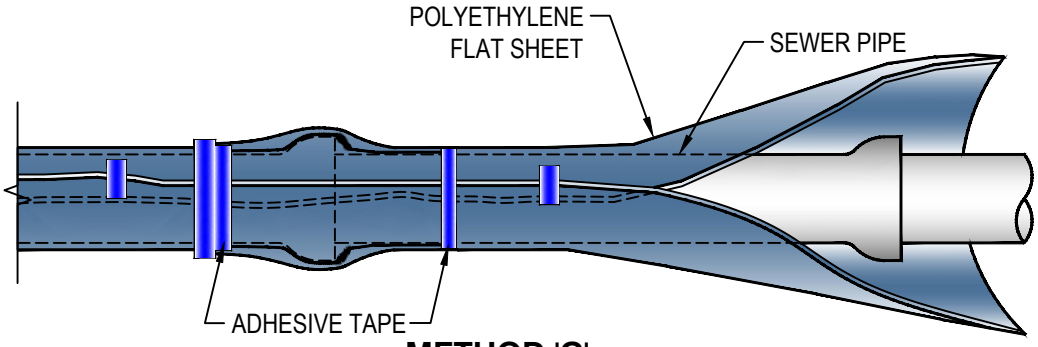
METHOD 'A'

METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS.



METHOD 'B'

METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. THIS METHOD IS NOT RECOMMENDED FOR BOLTED-TYPE JOINTS UNLESS AN ADDITIONAL LAYER OF POLYETHYLENE IS PROVIDED OVER THE JOINT AREA AS IN METHODS 'A' AND 'C'.



METHOD 'C'

METHOD 'C' - EACH SECTION IS WRAPPED WITH A FLAT POLYETHYLENE SHEET.

THE ANSI/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASEMENT/ SLEEVING.

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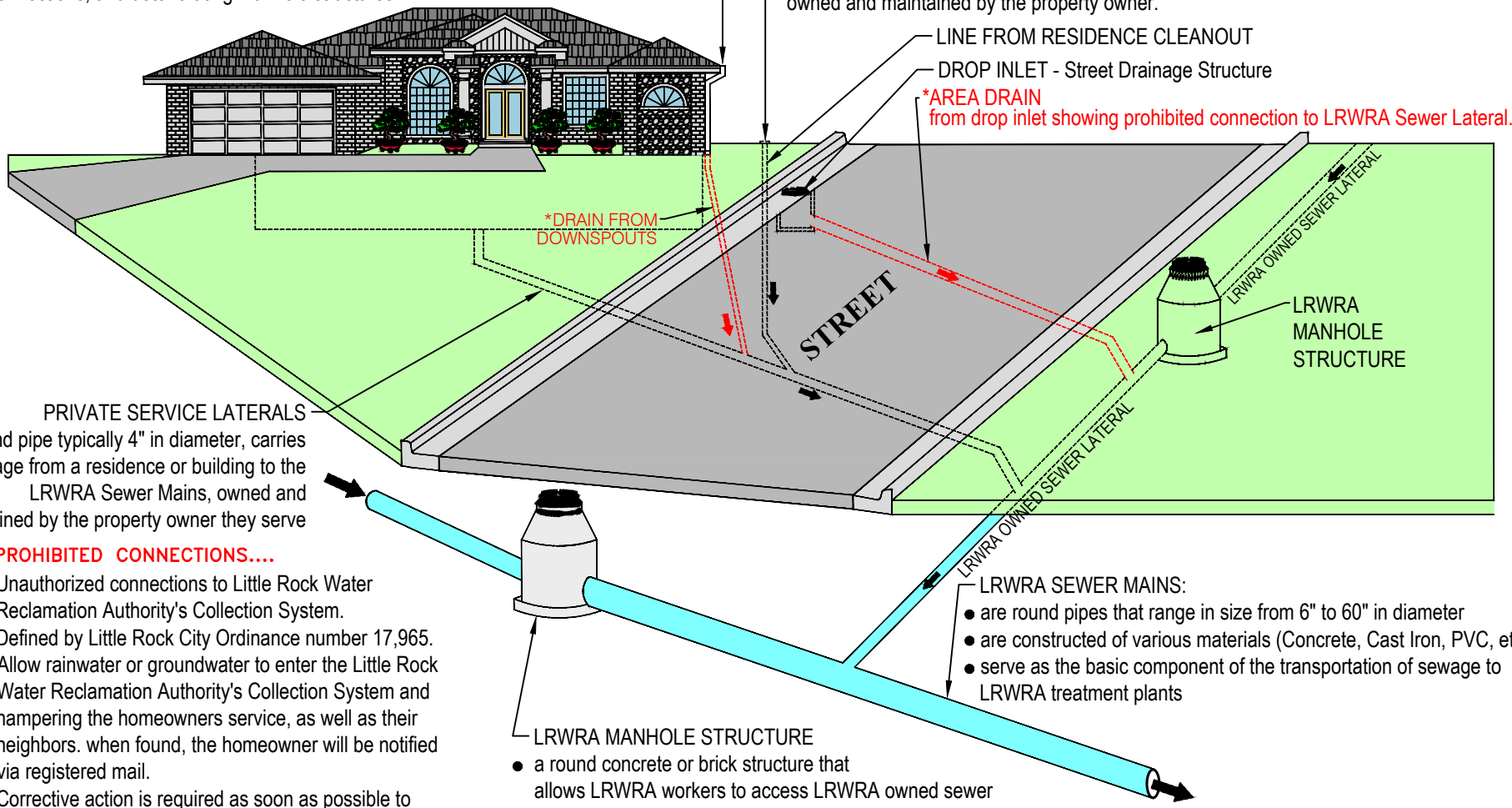
INSTALLATION OF POLYETHYLENE ENCASEMENT DETAILS

4.6

Prepared By: Andy Stallings
Updated: 7/10/2019 7:27:18 AM
Drawing Status: **APPROVED**
Filename: 4.6.dwg

*** INFLOW....**

- Enters into the LRWRA Collection System of unwanted storm water runoff generated during rainfall events.
- Enters into the LRWRA Collection System through LRWRA Main and private service line defects, roof downspouts, street drainage structures and connections, and deteriorating manhole structures.



*** PROHIBITED CONNECTIONS....**

- Unauthorized connections to Little Rock Water Reclamation Authority's Collection System.
- Defined by Little Rock City Ordinance number 17,965.
- Allow rainwater or groundwater to enter the Little Rock Water Reclamation Authority's Collection System and hampering the homeowners service, as well as their neighbors. when found, the homeowner will be notified via registered mail.
- Corrective action is required as soon as possible to avoid enforcement actions.

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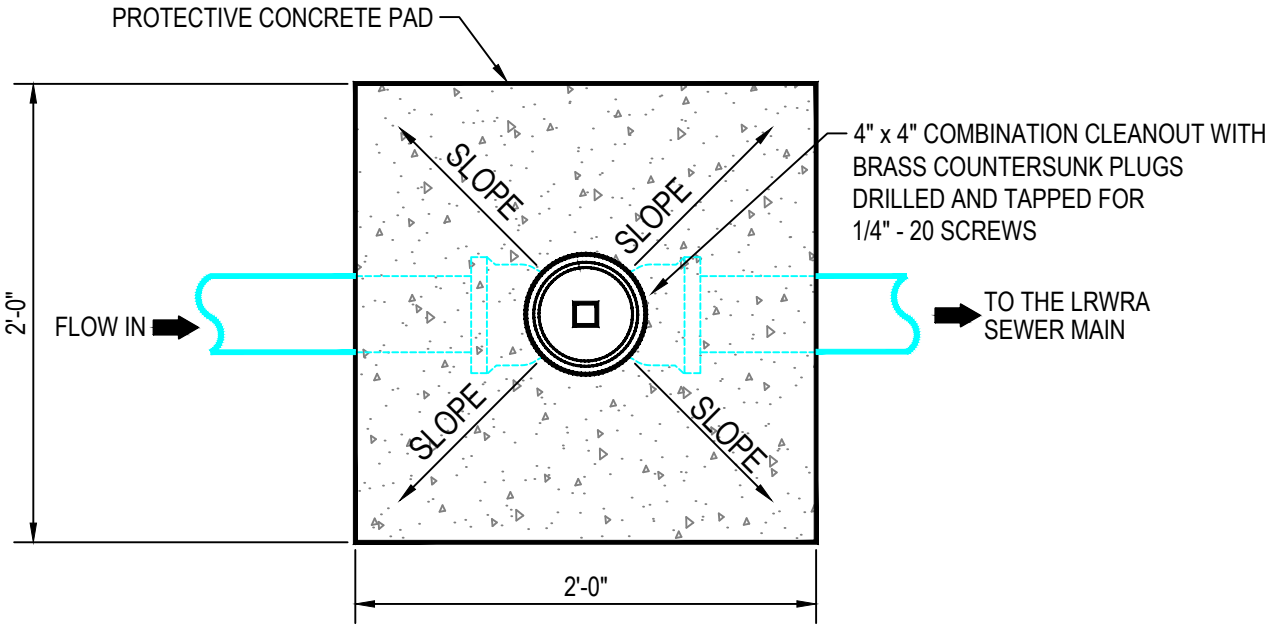
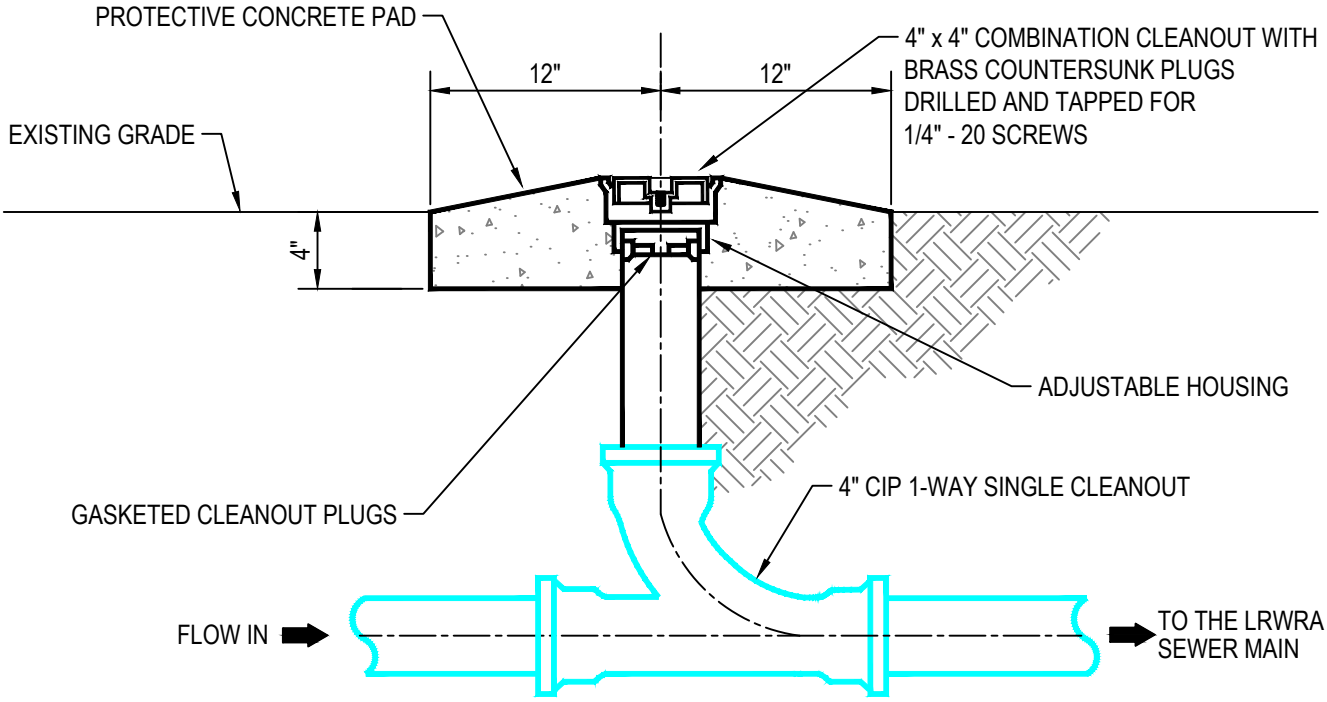
TYPICAL PRIVATE RESIDENCE SEWER SYSTEM LAYOUT

5.0

Prepared By: Scott Taylor
Updated: 7/29/2019 2:41:46 PM
Drawing Status: **APPROVED**
Filename: 5.0.dwg



PLAN VIEW



SECTION

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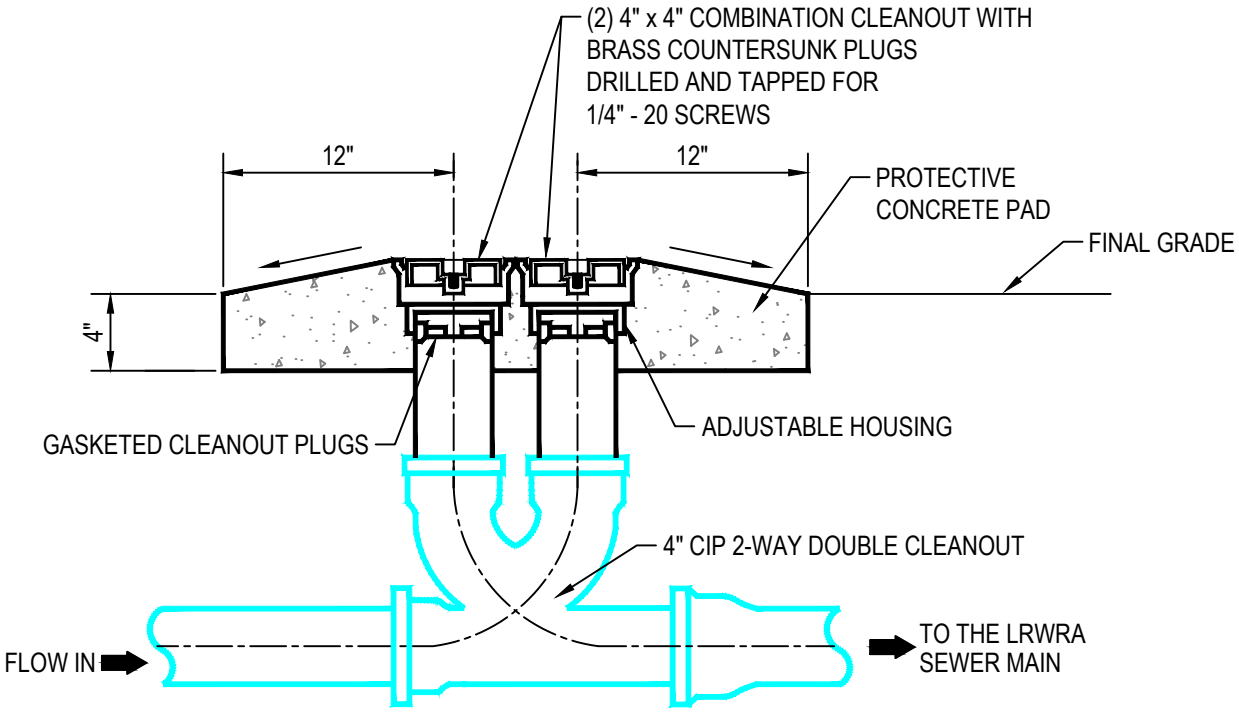
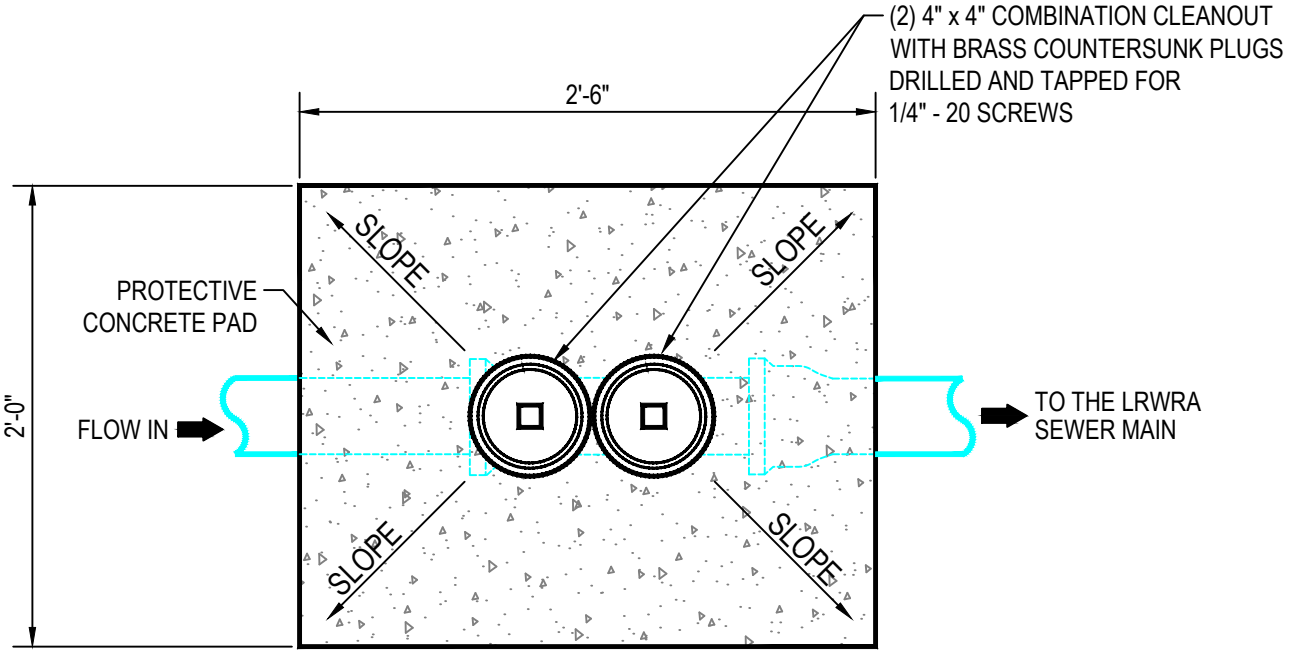
ONE-WAY CLEANOUT DETAIL

5.1

Prepared By: Scott Taylor
Updated: 7/29/2019 2:44:51 PM
Drawing Status: **APPROVED**
Filename: 5.1.dwg



SECTION



PLAN VIEW

LITTLE ROCK
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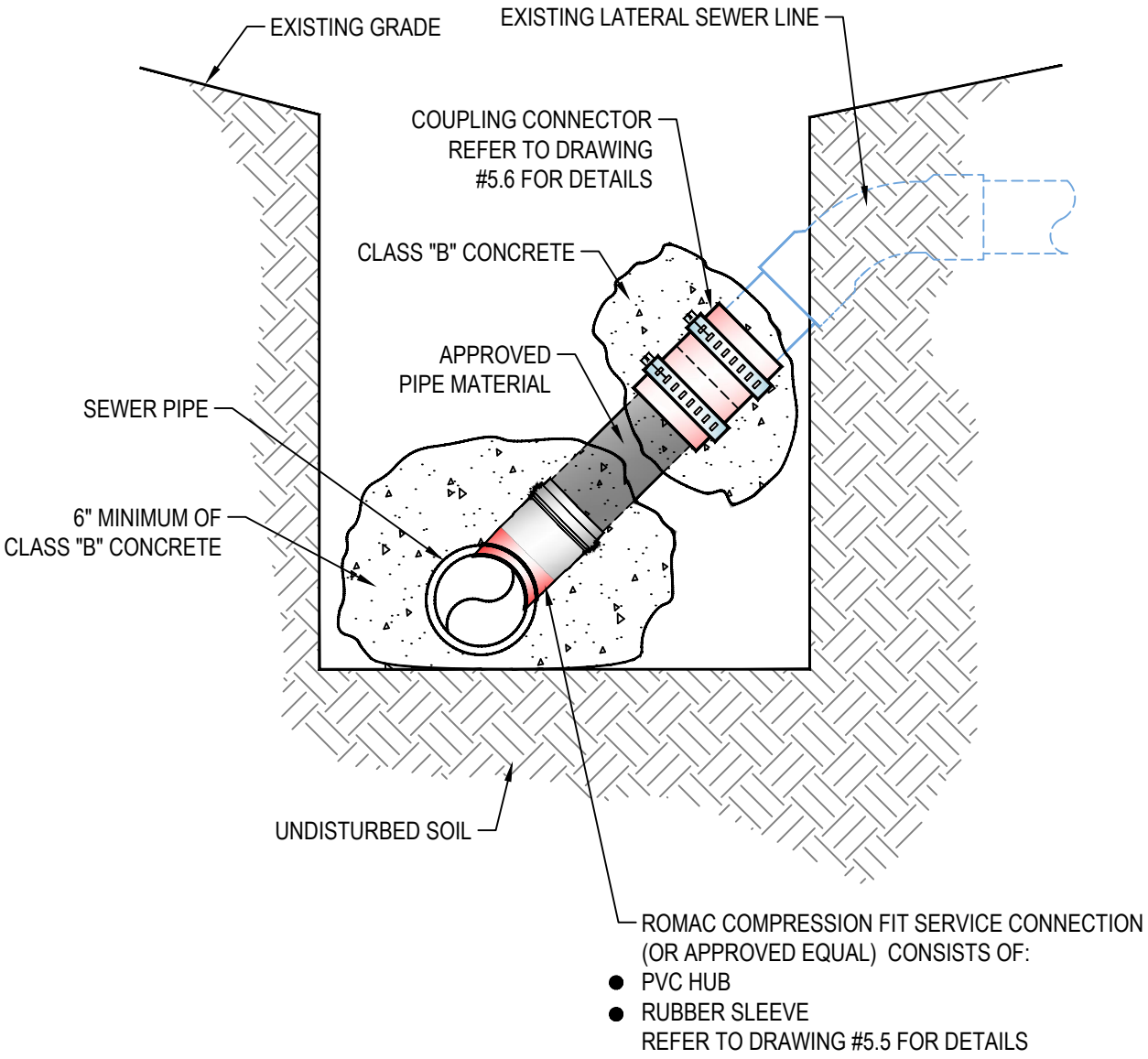
TWO-WAY DOUBLE CLEANOUT DETAILS

5.2

Prepared By: Andy Stallings
Updated: 7/10/2019 7:26:43 AM
Drawing Status: **APPROVED**
Filename: 5.2.dwg



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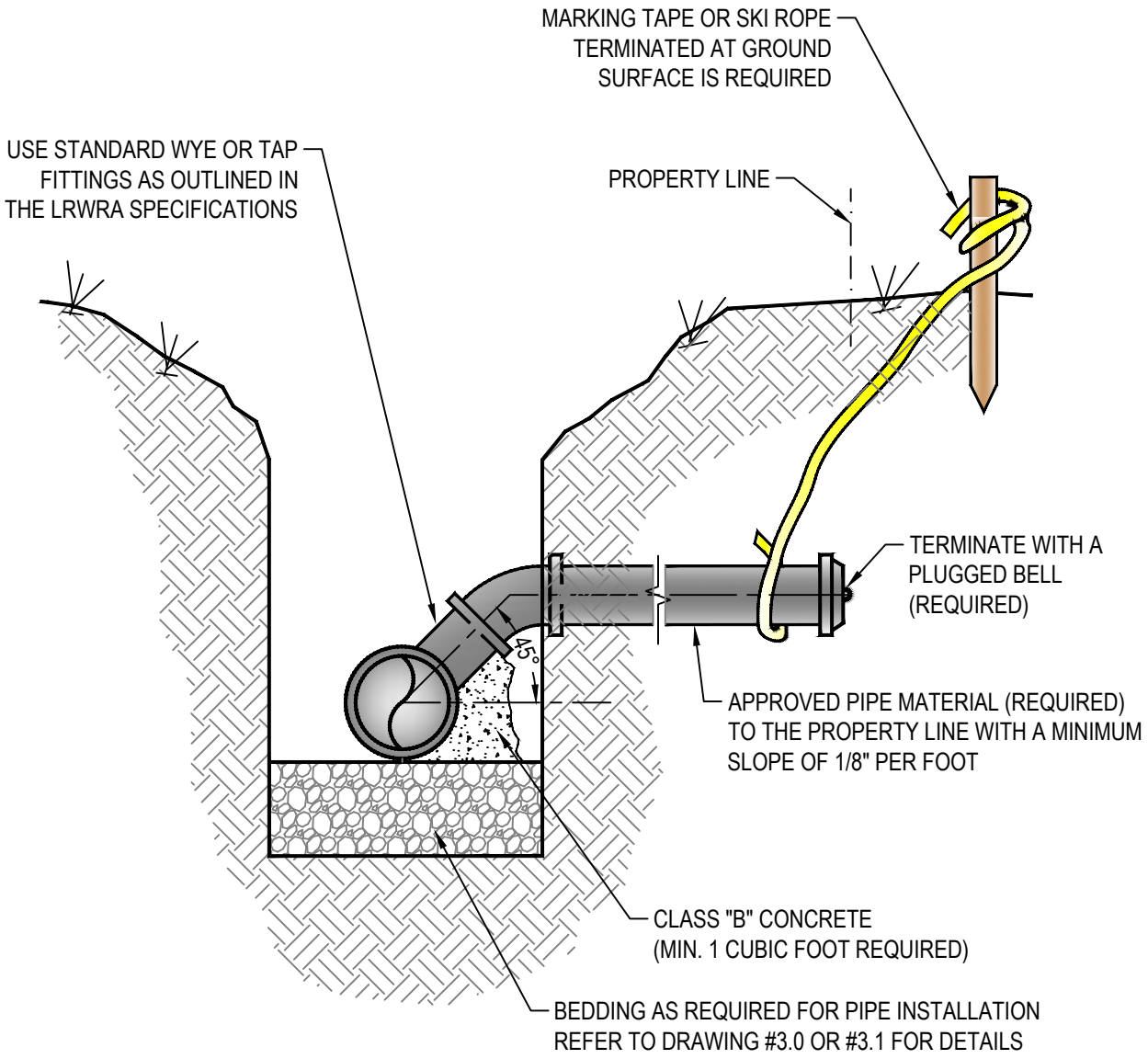
NEW CONSTRUCTION CONNECTION TO HOUSE SERVICE DETAIL

5.3

Prepared By: Andy Stallings
Updated: 7/10/2019 7:26:38 AM
Drawing Status: **APPROVED**
Filename: 5.3.dwg



LITTLE ROCK Water Reclamation Authority
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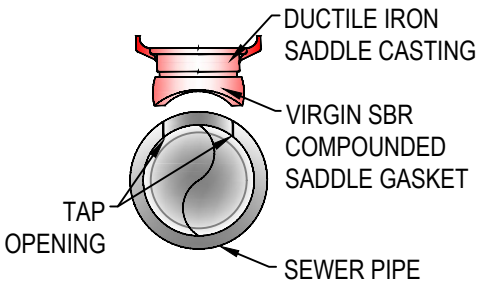
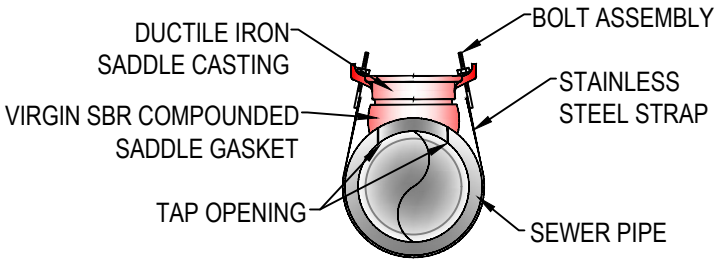
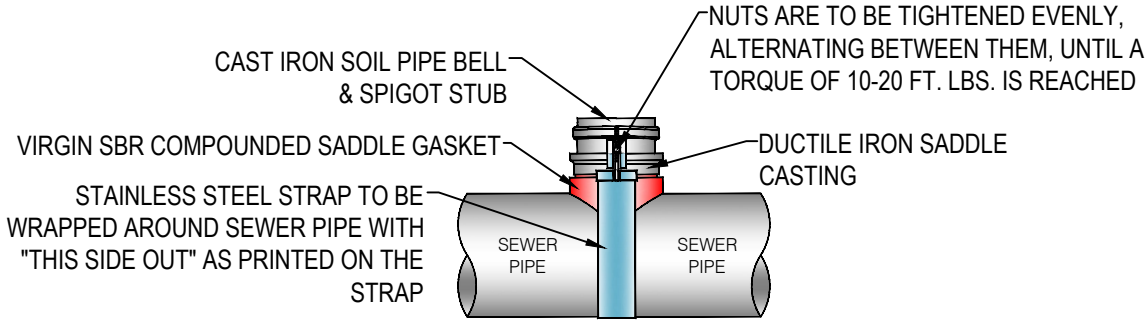
NEW CONSTRUCTION SERVICE WYE DETAIL

5.4

Prepared By: Andy Stallings
Updated: 7/9/2019 5:52:04 PM
Drawing Status: **APPROVED**
Filename: 5.4.dwg

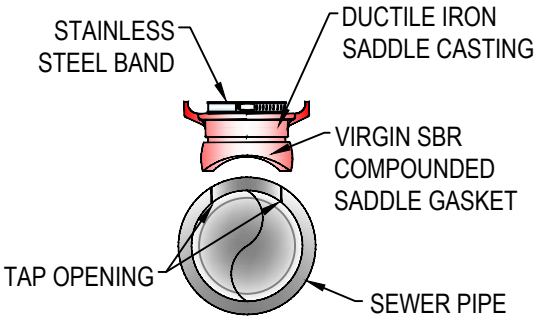


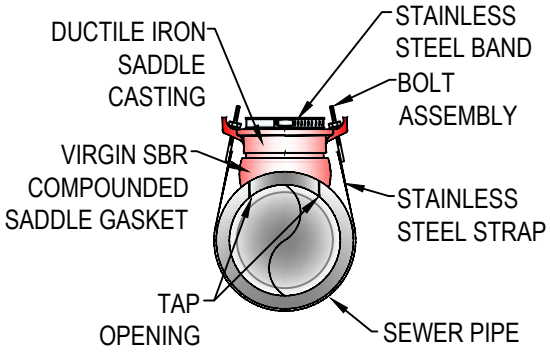


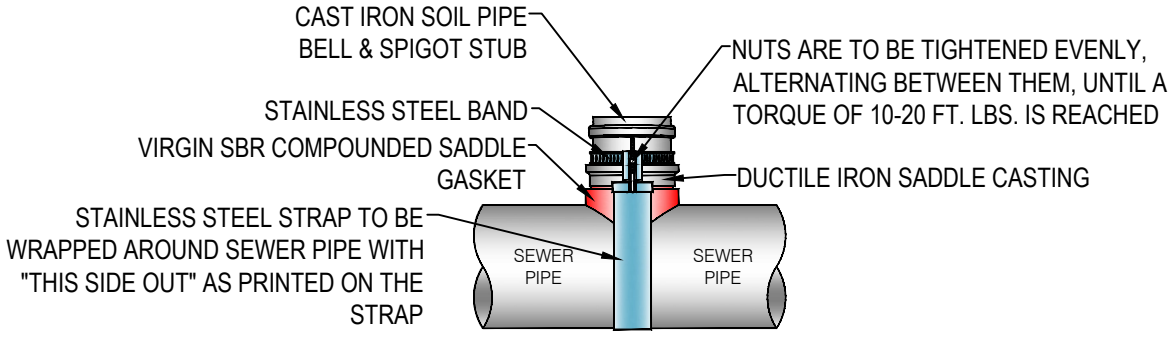


COMPRESSION FIT SERVICE CONNECTION

(FOR 12" & LARGER DIAMETER PIPE ONLY)







COMPOSITE SADDLE FOR DUCTILE IRON SERVICES

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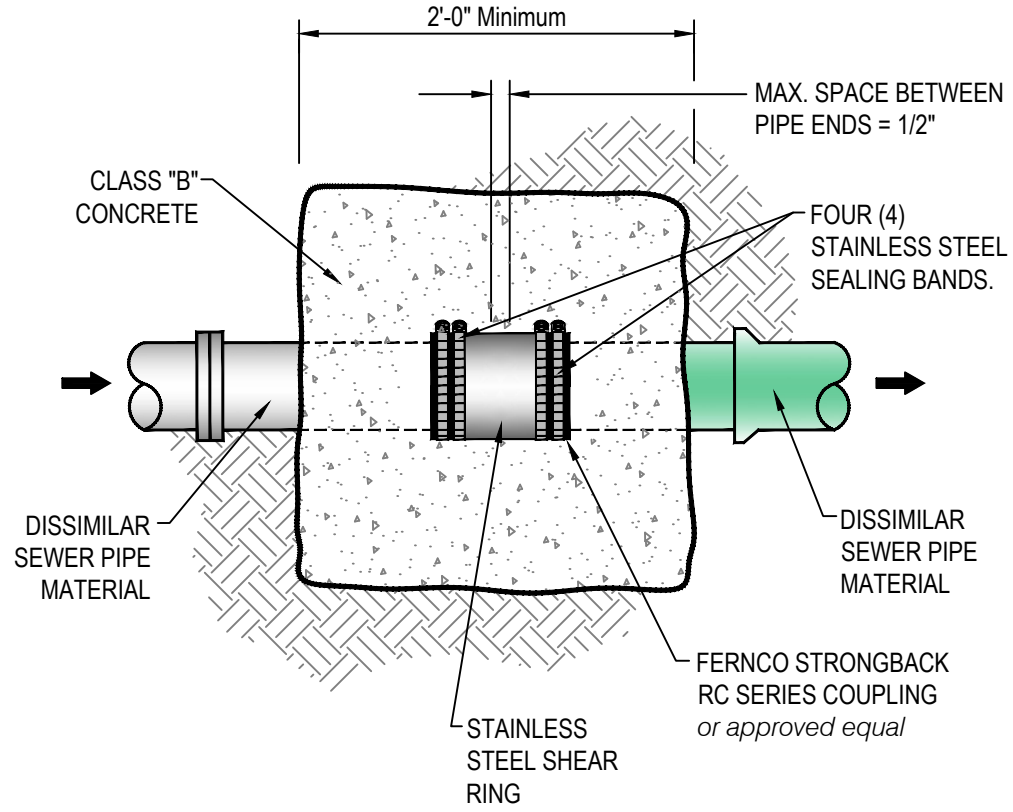
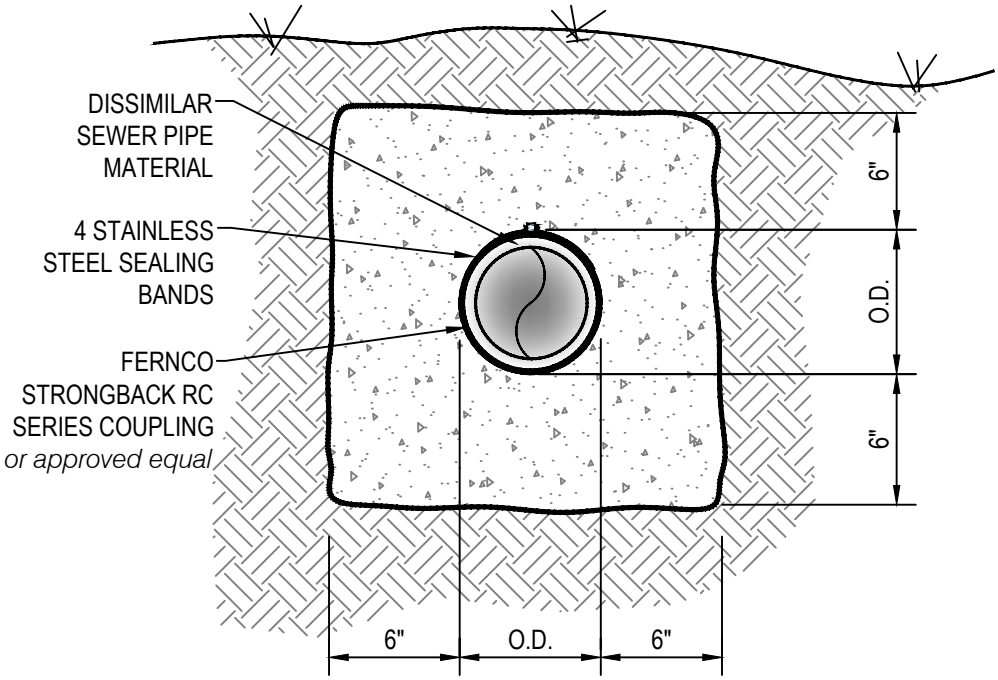
SADDLE DETAILS

5.5

Prepared By: Andy Stallings
Updated: 7/10/2019 7:26:27 AM
Drawing Status: **APPROVED**
Filename: 5.5.dwg





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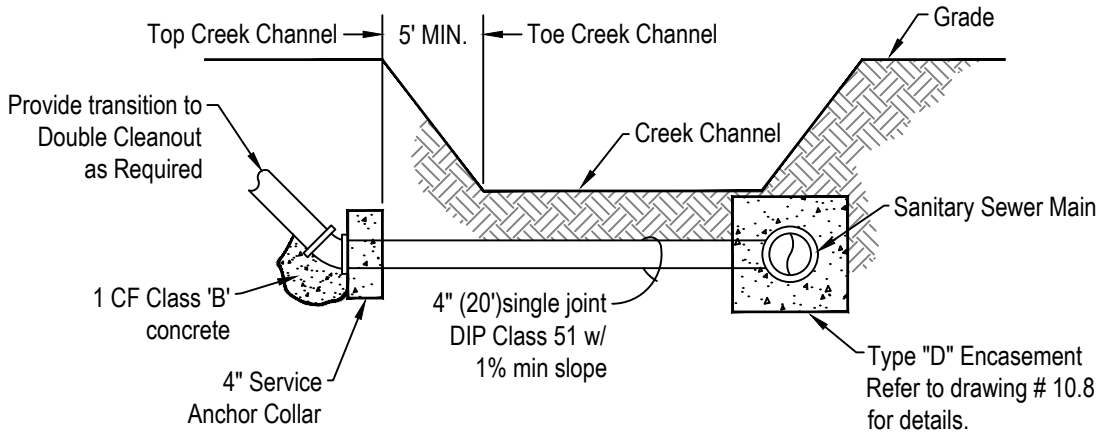
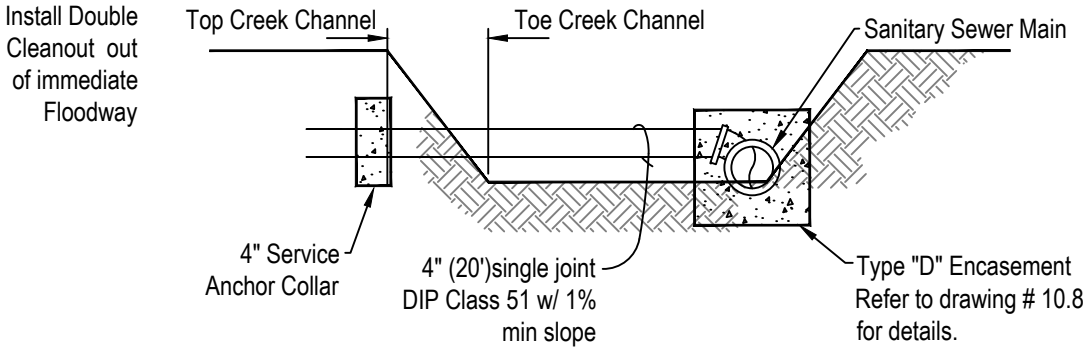
FLEXIBLE COUPLING DETAILS

5.6

Prepared By: Andy Stallings
Updated: 7/10/2019 7:26:22 AM
Drawing Status: **APPROVED**
Filename: 5.6.dwg



TYPICAL SERVICE LINE CREEK CROSSING



EXPOSED SERVICE LINE CREEK CROSSING

NOTE-

- 4" Service Line Reinstatements crossing an existing creek channel shall be constructed using 4" Ductile Iron Pipe (DIP).
- 4" Anchor Collar installed on the 4" service & a 12" Anchor Collar constructed around the tap or wye connection on the new main as shown in the above detail if New Main is not in Type "D" Encasement.

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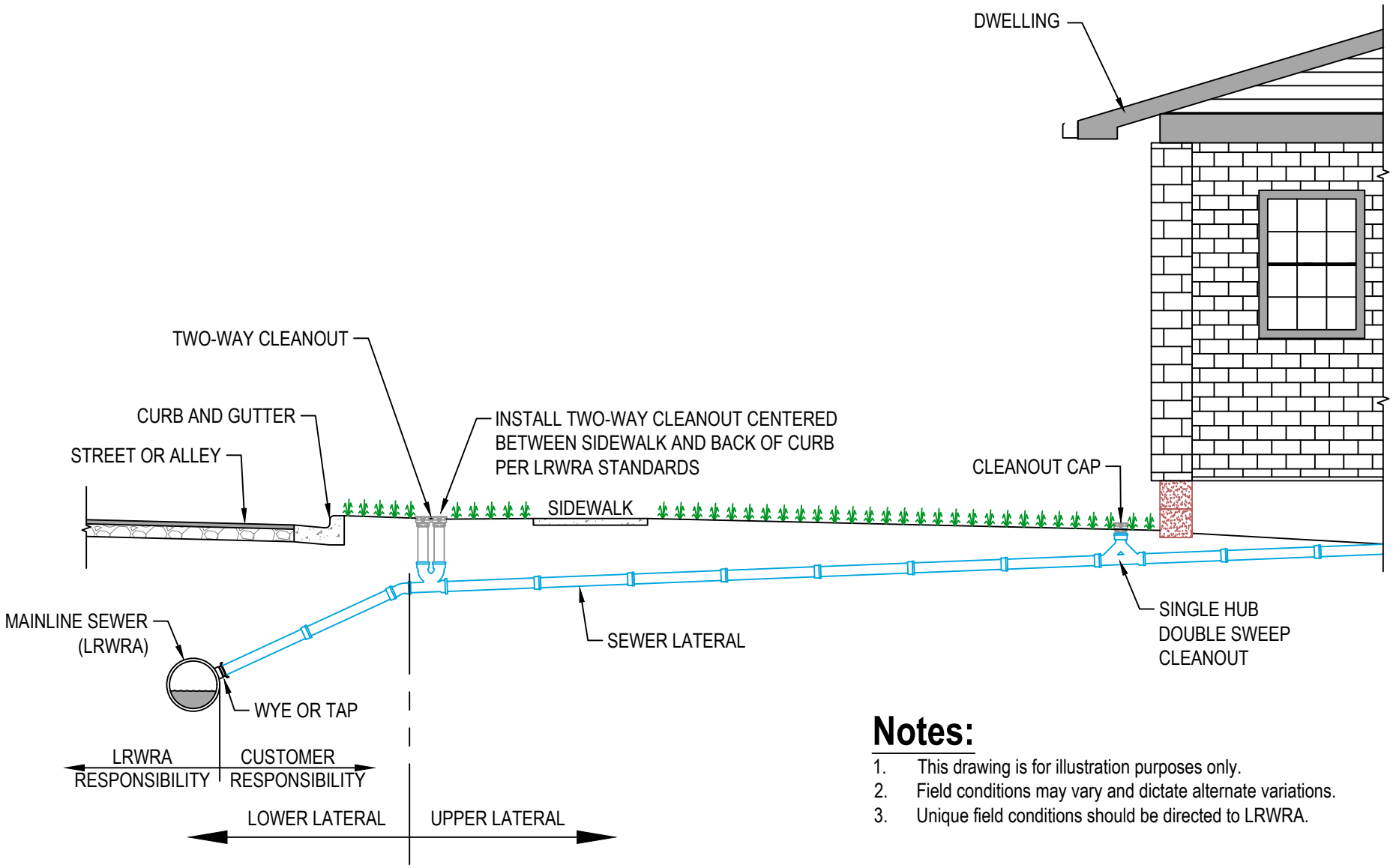
STANDARD SERVICE CREEK CROSSING DETAILS

5.7

Prepared By: Scott Taylor
Updated: 7/29/2019 2:48:08 PM
Drawing Status: **APPROVED**
Filename: 5.7.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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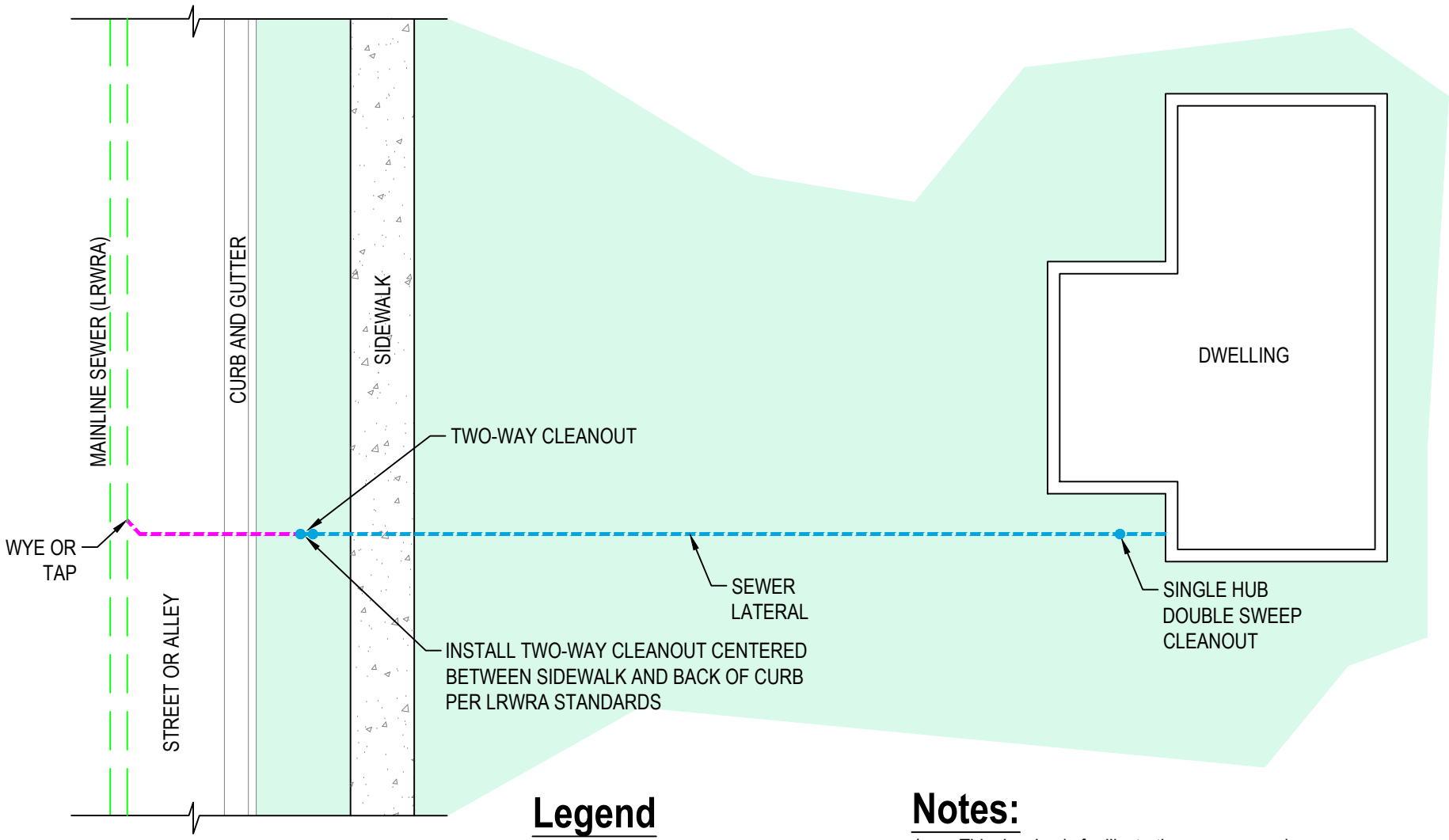
TYPICAL DWELLING SERVED BY A MAIN SEWER UNDER THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.8

Prepared By: Scott Taylor
Updated: 7/29/2019 3:51:48 PM
Drawing Status: **APPROVED**
Filename: 5.8.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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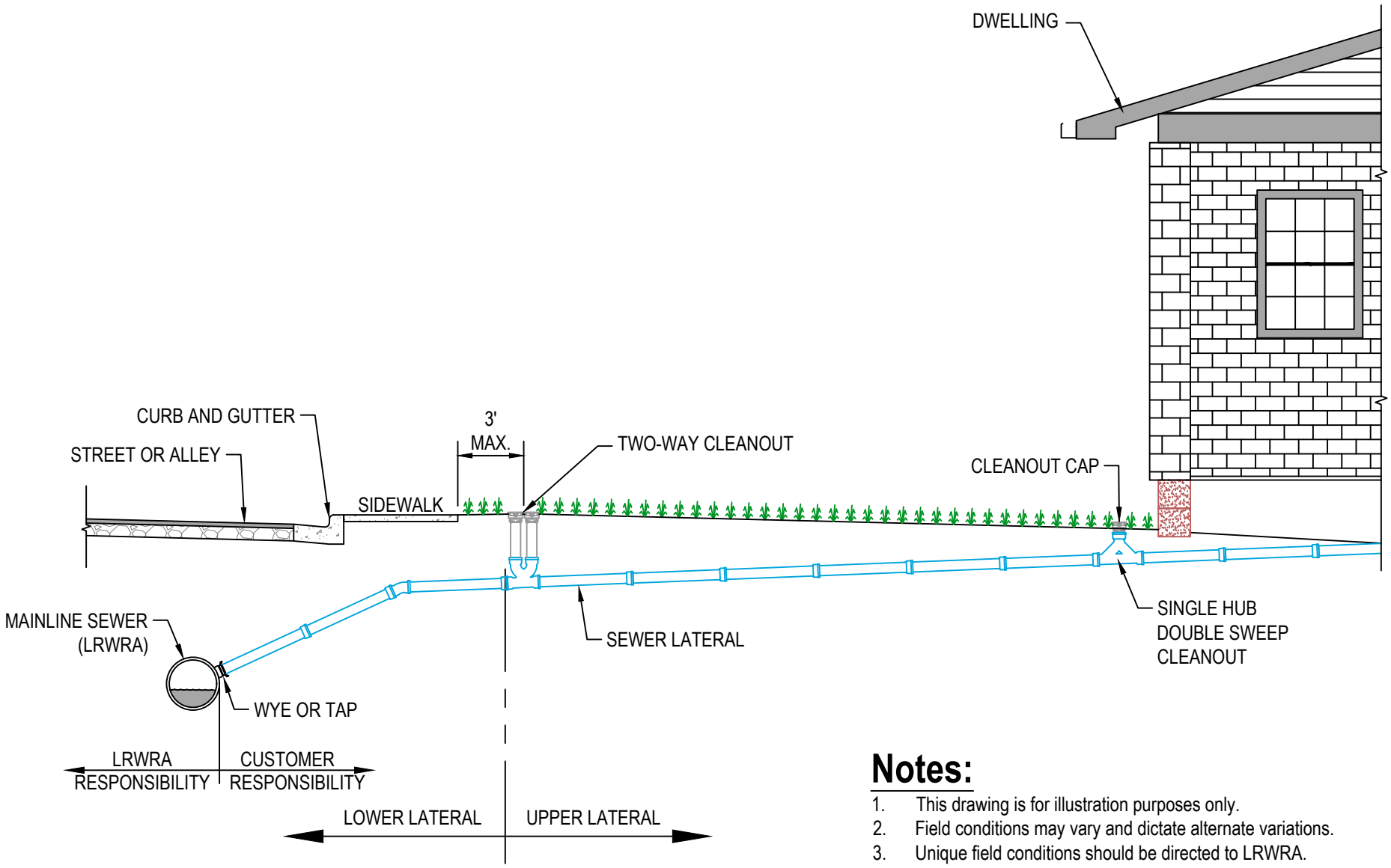
TYPICAL DWELLING SERVED BY A MAIN SEWER UNDER THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.9

Prepared By: Scott Taylor
Updated: 7/29/2019 2:51:09 PM
Drawing Status: **APPROVED**
Filename: 5.9.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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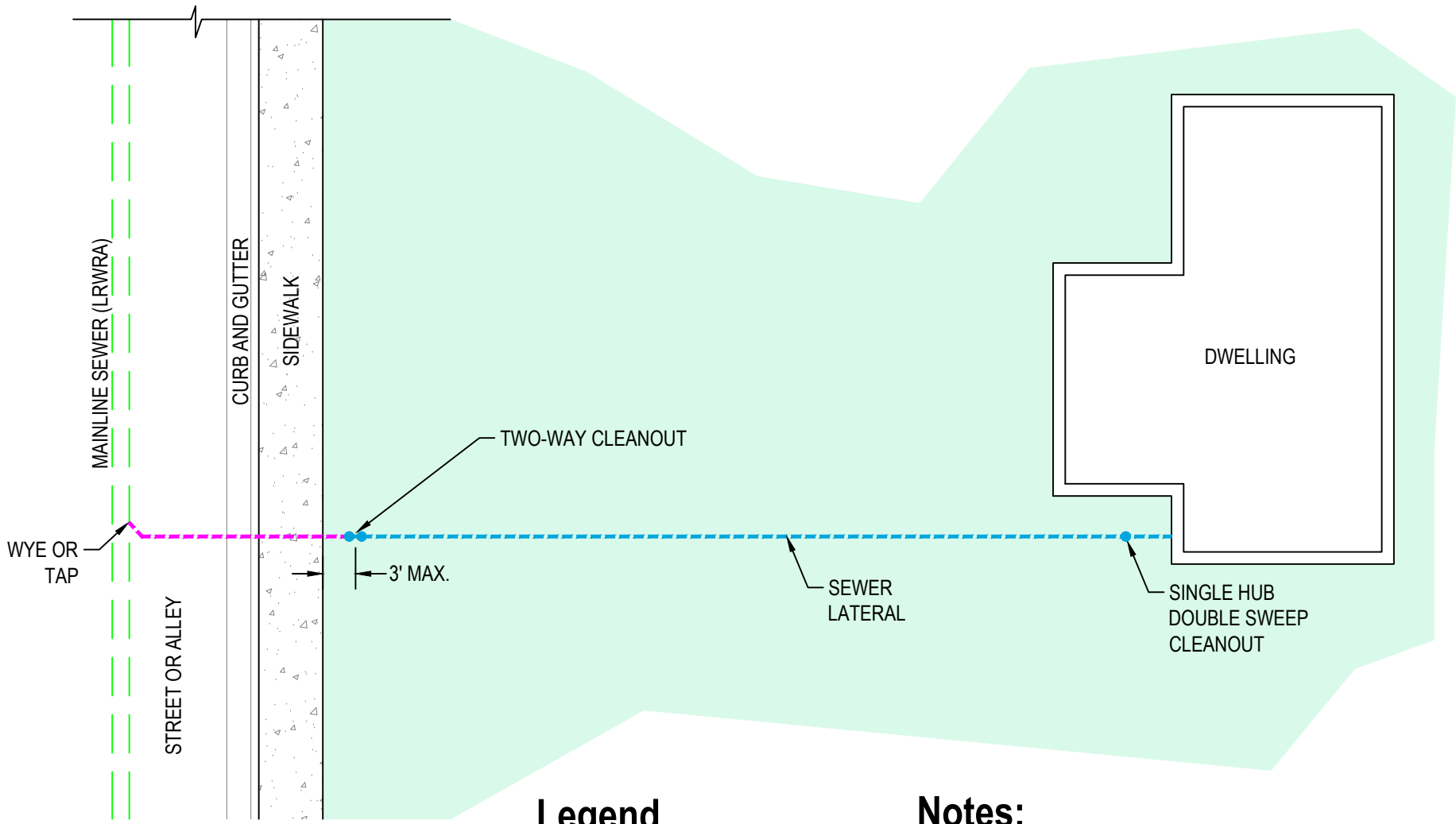
TYPICAL DWELLING SERVED BY A MAIN SEWER UNDER THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.10

Prepared By: Scott Taylor
Updated: 7/29/2019 2:51:51 PM
Drawing Status: **APPROVED**
Filename: 5.10.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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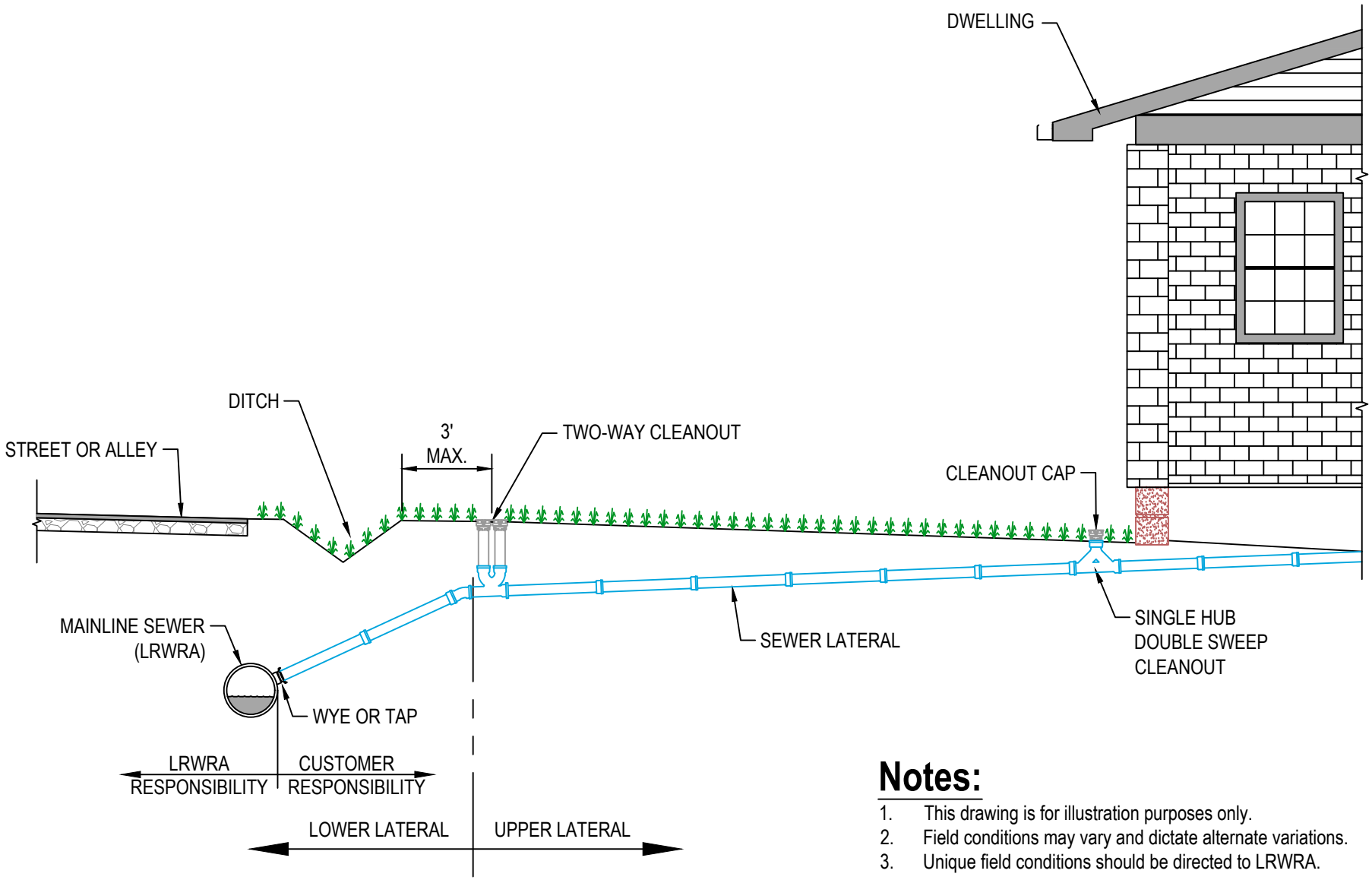
TYPICAL DWELLING SERVED BY A MAIN SEWER UNDER THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.11

Prepared By: Scott Taylor
Updated: 7/29/2019 2:52:16 PM
Drawing Status: **APPROVED**
Filename: 5.11.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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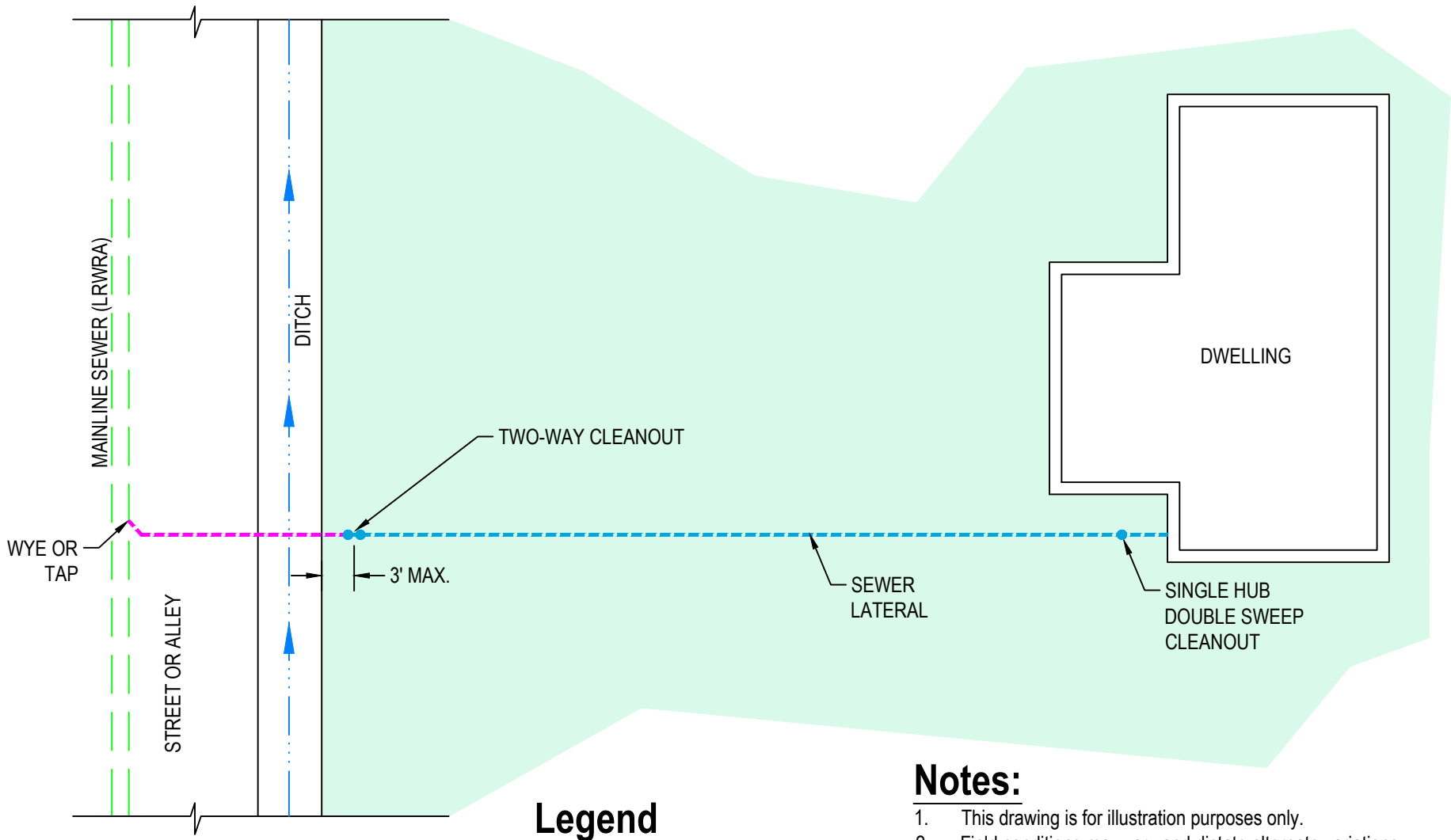
TYPICAL DWELLING SERVED BY A MAIN SEWER IN THE STREET OR ALLEY WITH DITCH AND NO CURB OR SIDEWALK

5.12

Prepared By: Scott Taylor
Updated: 7/29/2019 2:52:43 PM
Drawing Status: **APPROVED**
Filename: 5.12.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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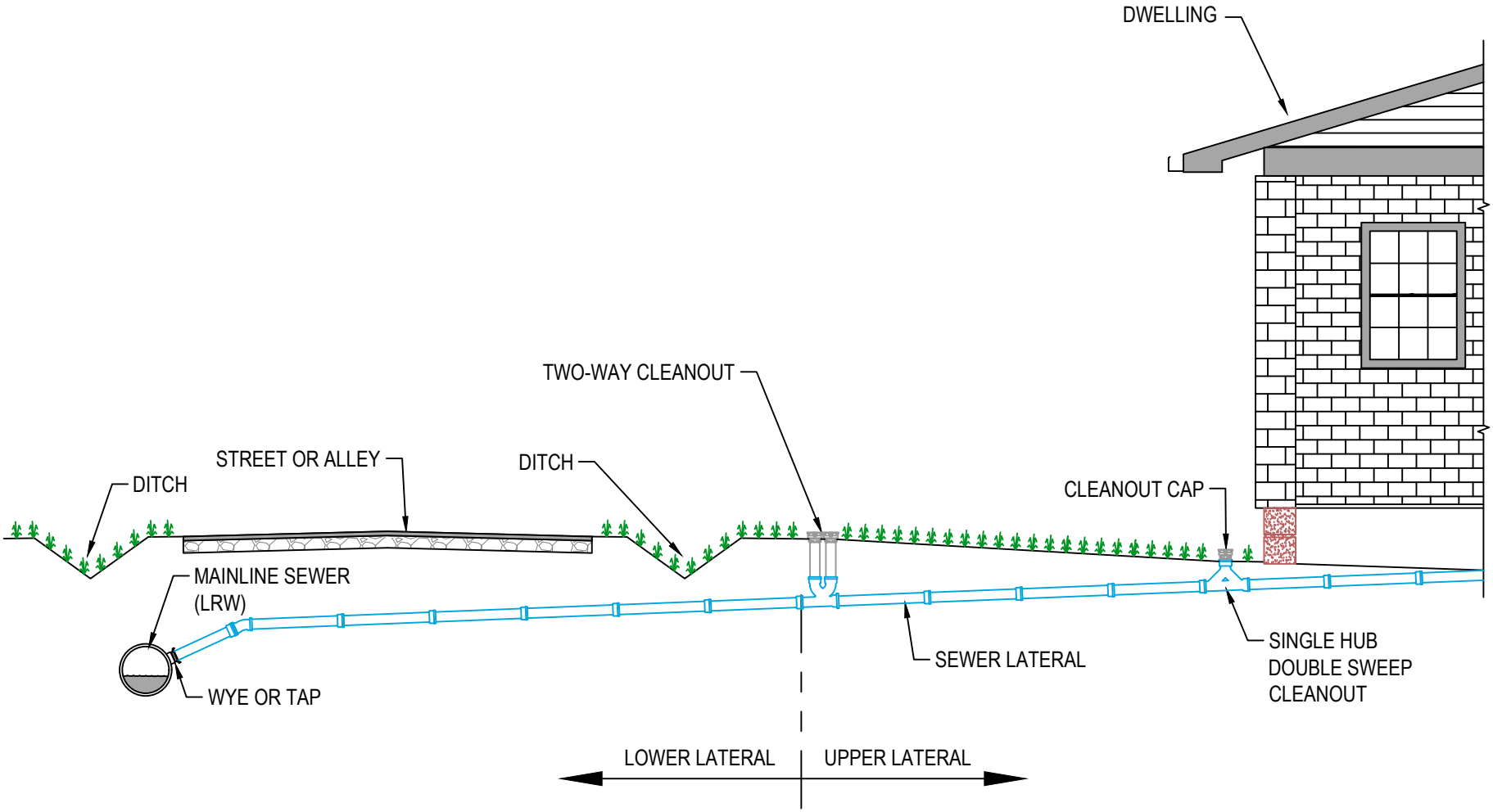
TYPICAL DWELLING SERVED BY A MAIN SEWER IN THE STREET OR ALLEY WITH DITCH AND NO CURB OR SIDEWALK

5.13

Prepared By: Scott Taylor
Updated: 7/29/2019 2:52:59 PM
Drawing Status: **APPROVED**
Filename: 5.13.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRW.

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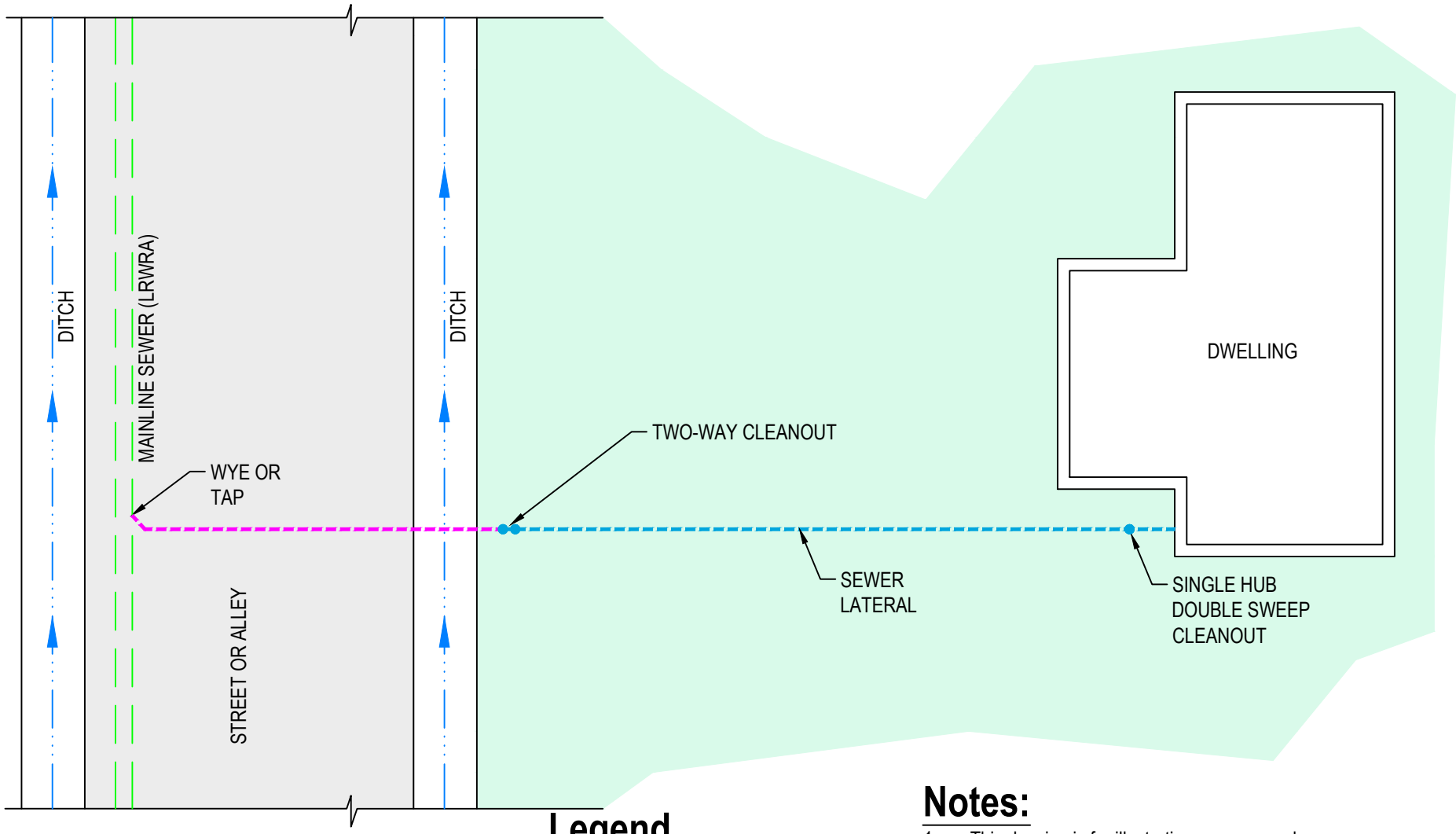
TYPICAL DWELLING SERVED BY A MAIN SEWER ACROSS THE STREET OR ALLEY WITH DITCHES AND NO CURB OR SIDEWALK

5.14

Prepared By: Scott Taylor
Updated: 7/29/2019 3:55:41 PM
Drawing Status: **APPROVED**
Filename: 5.14.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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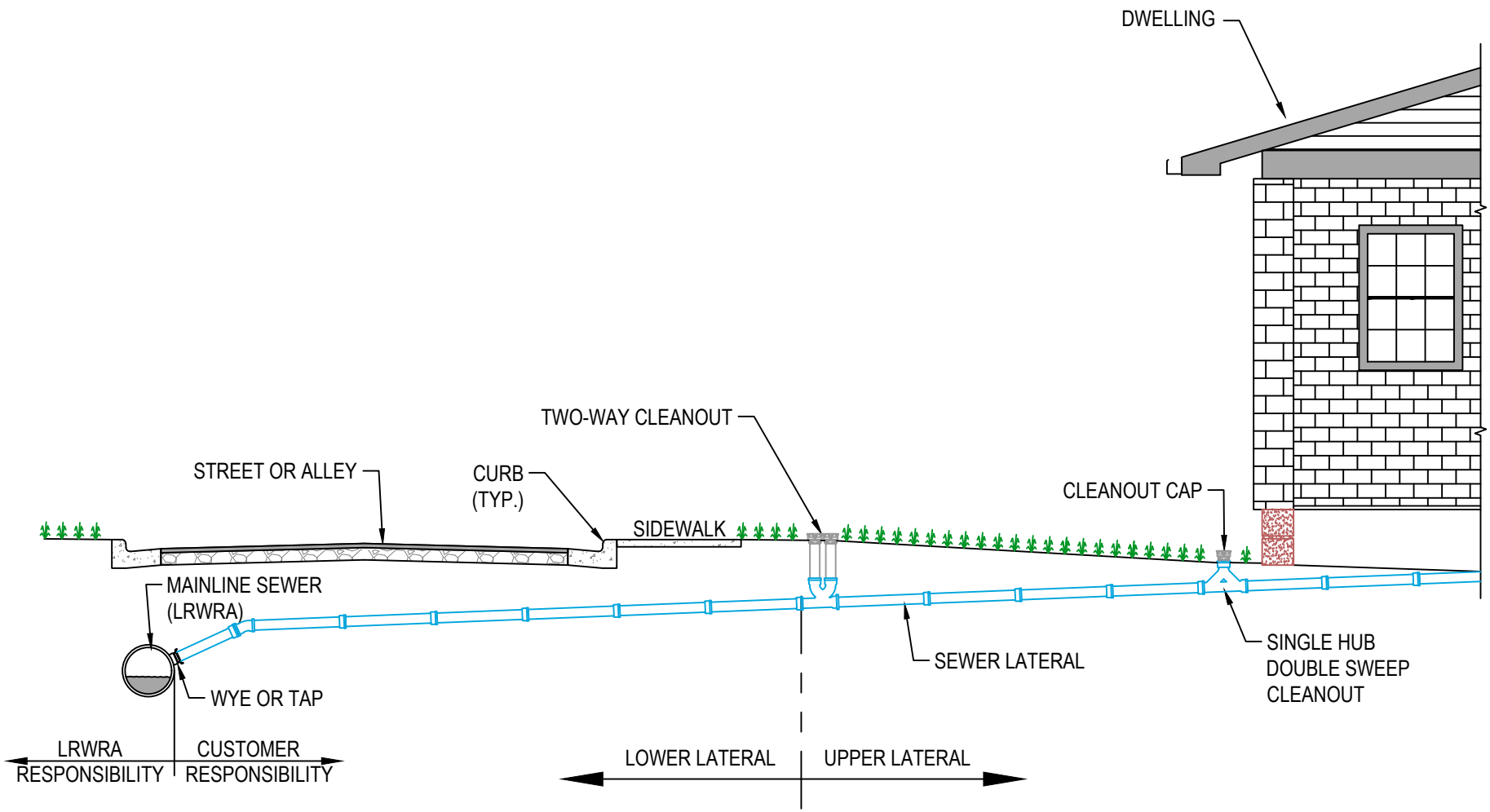
TYPICAL DWELLING SERVED BY A MAIN SEWER ACROSS THE STREET OR ALLEY WITH DITCHES AND NO CURB OR SIDEWALK

5.15

Prepared By: Scott Taylor
Updated: 7/29/2019 3:56:45 PM
Drawing Status: **APPROVED**
Filename: 5.15.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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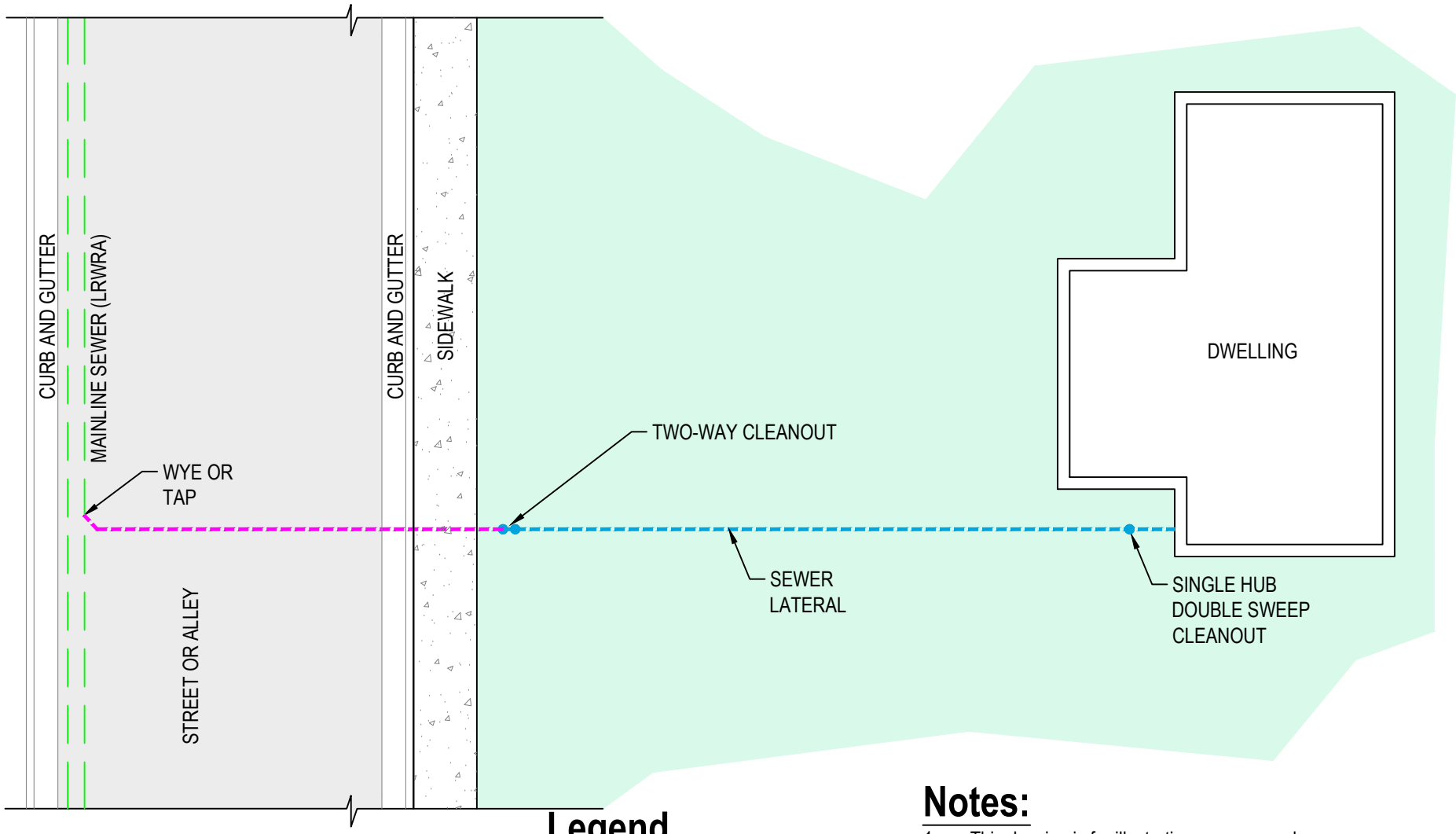
TYPICAL DWELLING SERVED BY A MAIN SEWER ACROSS THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.16

Prepared By: Scott Taylor
Updated: 7/29/2019 3:57:59 PM
Drawing Status: **APPROVED**
Filename: 5.16.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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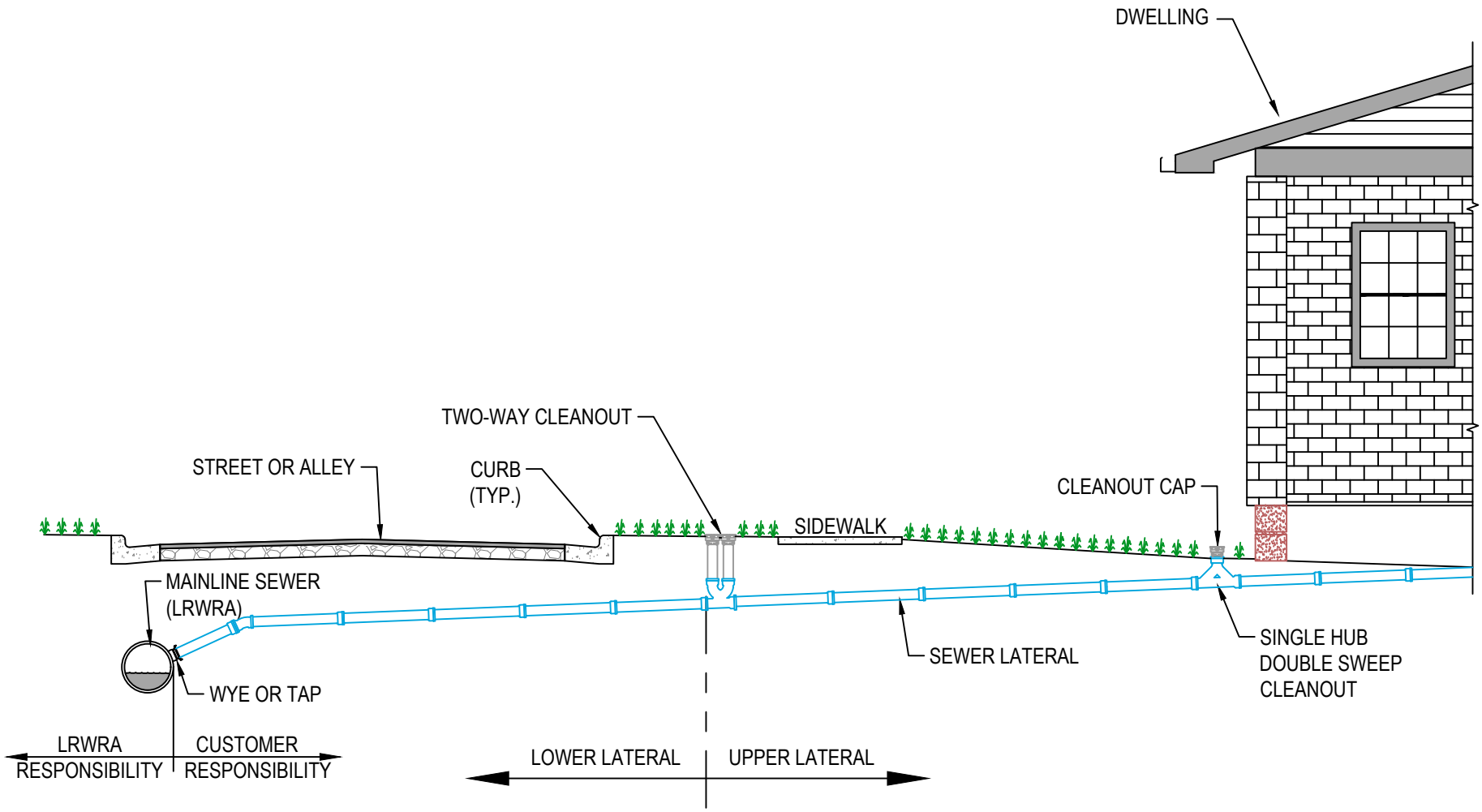
TYPICAL DWELLING SERVED BY A MAIN SEWER ACROSS THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.17

Prepared By: Scott Taylor
Updated: 7/29/2019 3:59:26 PM
Drawing Status: **APPROVED**
Filename: 5.17.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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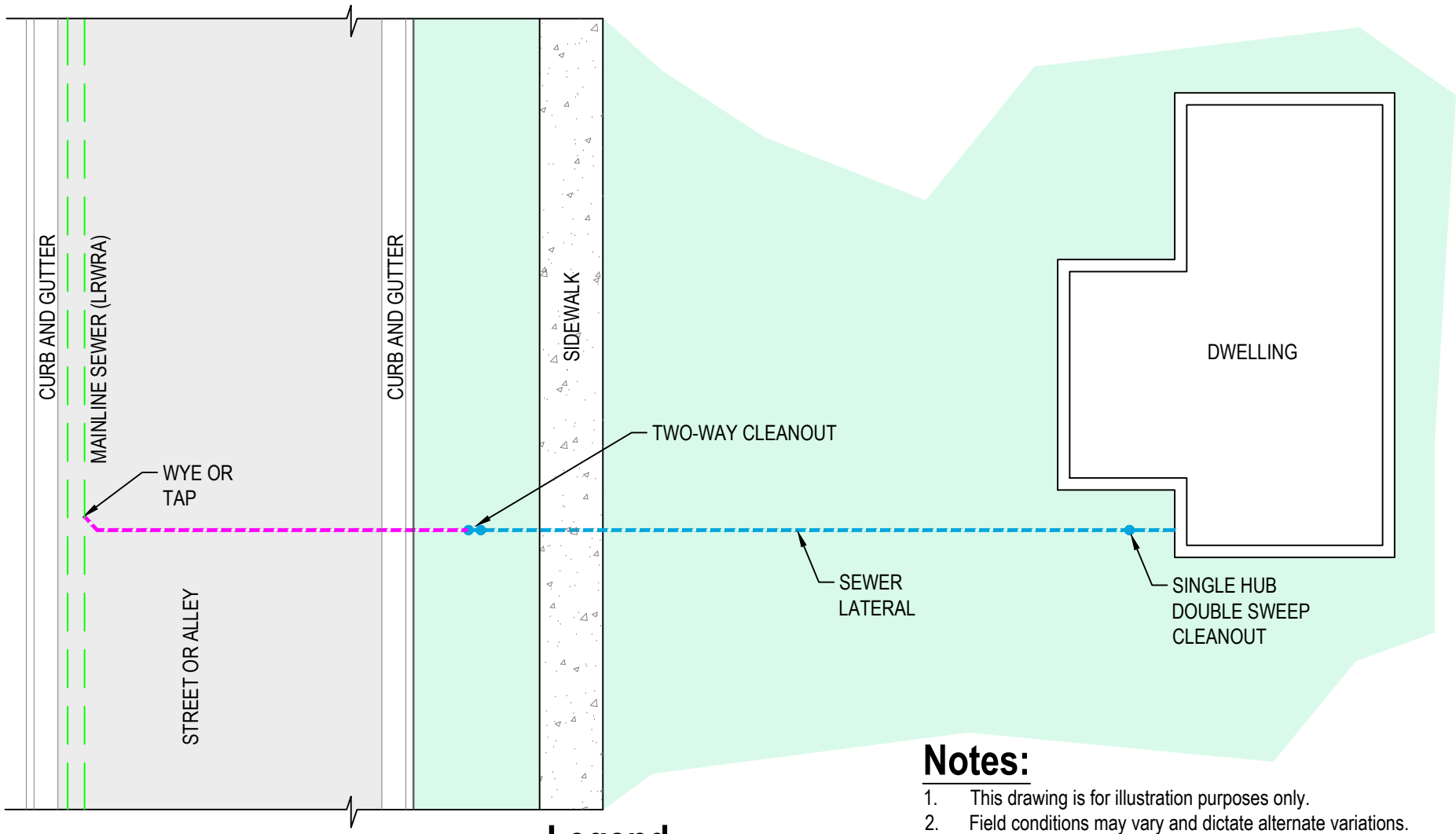
TYPICAL DWELLING SERVED BY A MAIN SEWER ACROSS THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.18

Prepared By: Scott Taylor
Updated: 7/29/2019 3:59:59 PM
Drawing Status: **APPROVED**
Filename: 5.18.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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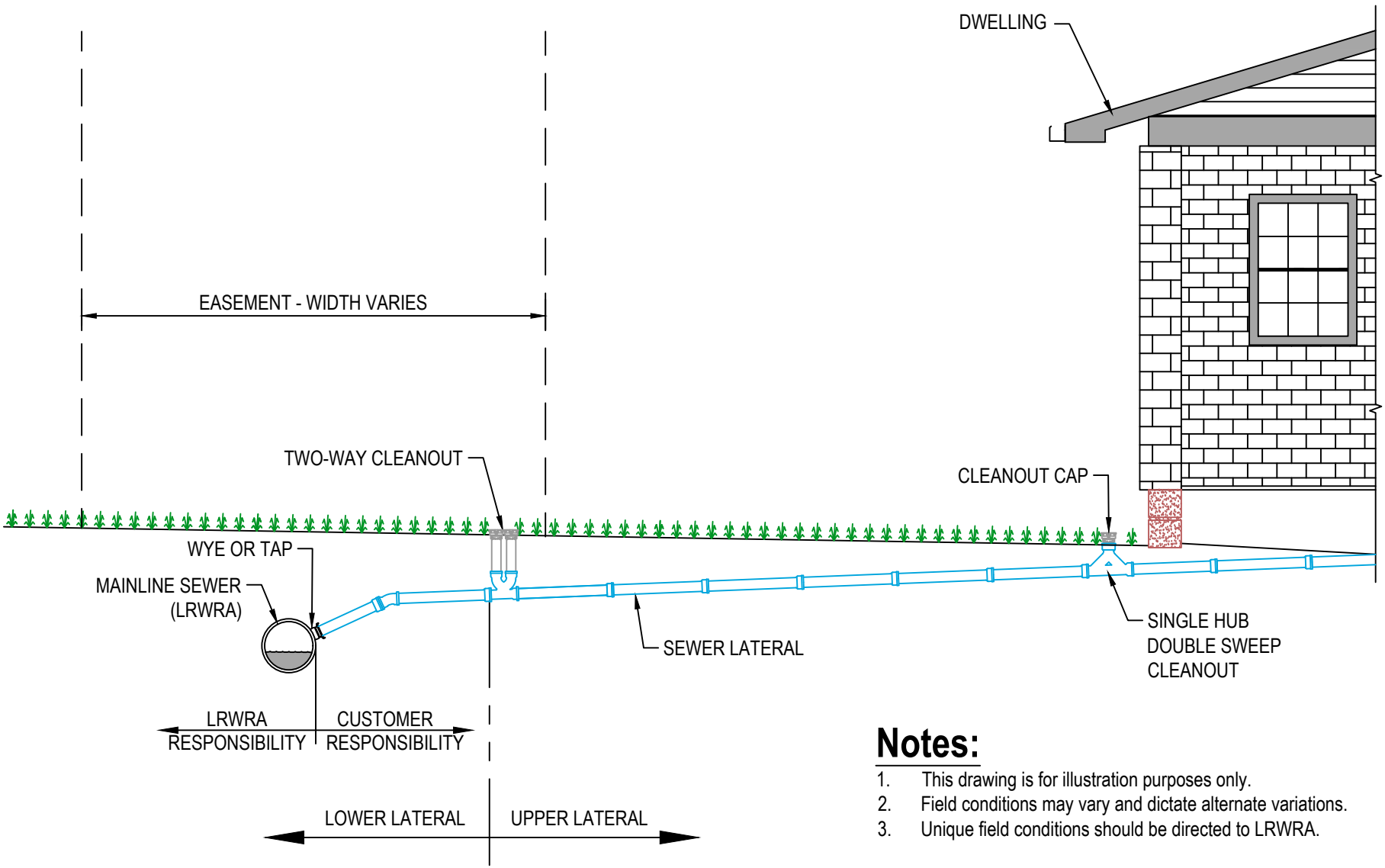
TYPICAL DWELLING SERVED BY A MAIN SEWER ACROSS THE STREET OR ALLEY WITH CURB AND SIDEWALK

5.19

Prepared By: Scott Taylor
Updated: 7/29/2019 4:00:46 PM
Drawing Status: **APPROVED**
Filename: 5.19.dwg



Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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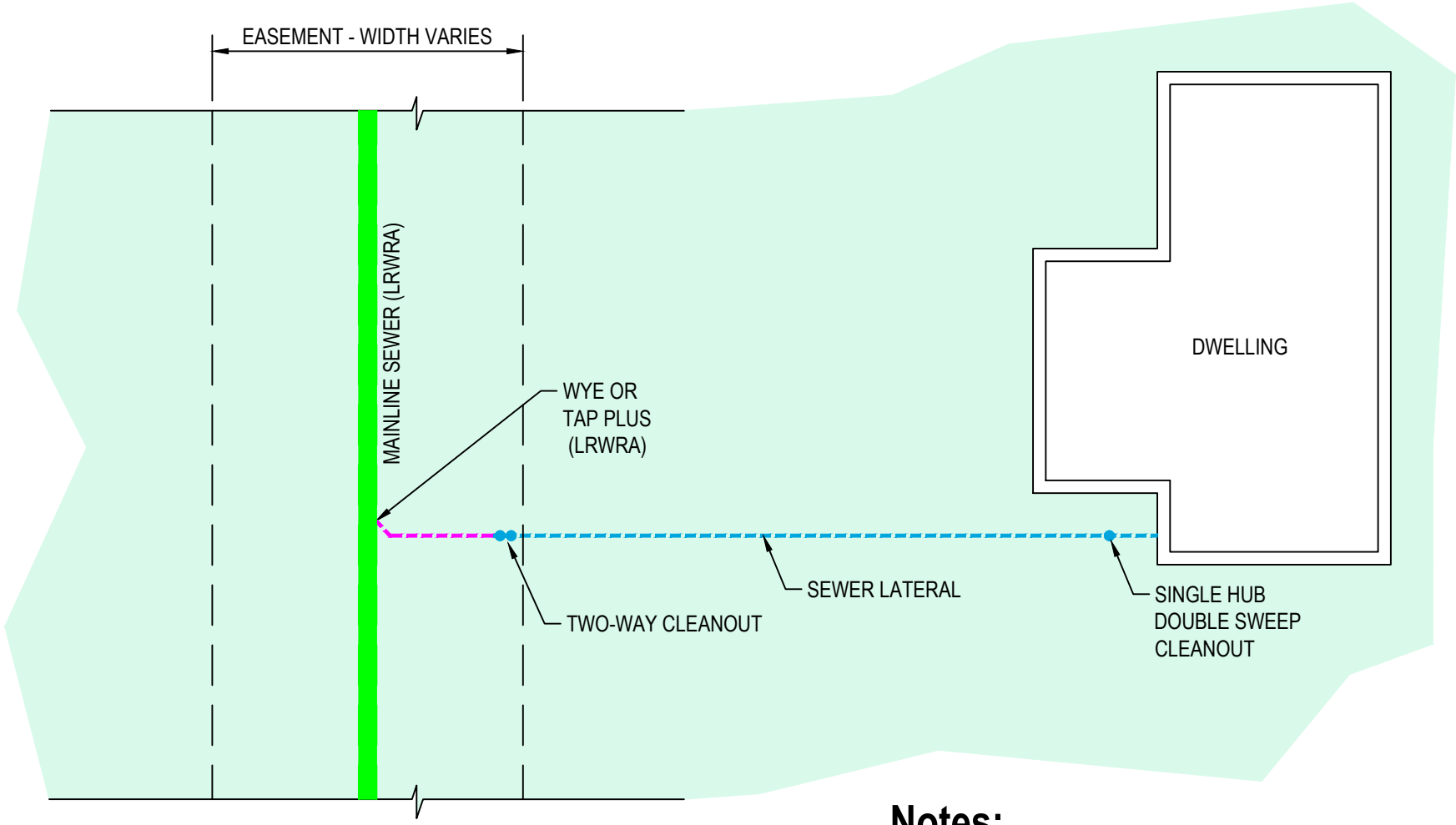
TYPICAL DWELLING SERVED BY A MAIN SEWER IN A BACK OR SIDE YARD LOCATED WITHIN AN EASEMENT

5.20

Prepared By: Scott Taylor
Updated: 7/29/2019 4:01:34 PM
Drawing Status: **APPROVED**
Filename: 5.20.dwg



Legend

- Upper Lateral
- Lower Lateral

Notes:

1. This drawing is for illustration purposes only.
2. Field conditions may vary and dictate alternate variations.
3. Unique field conditions should be directed to LRWRA.

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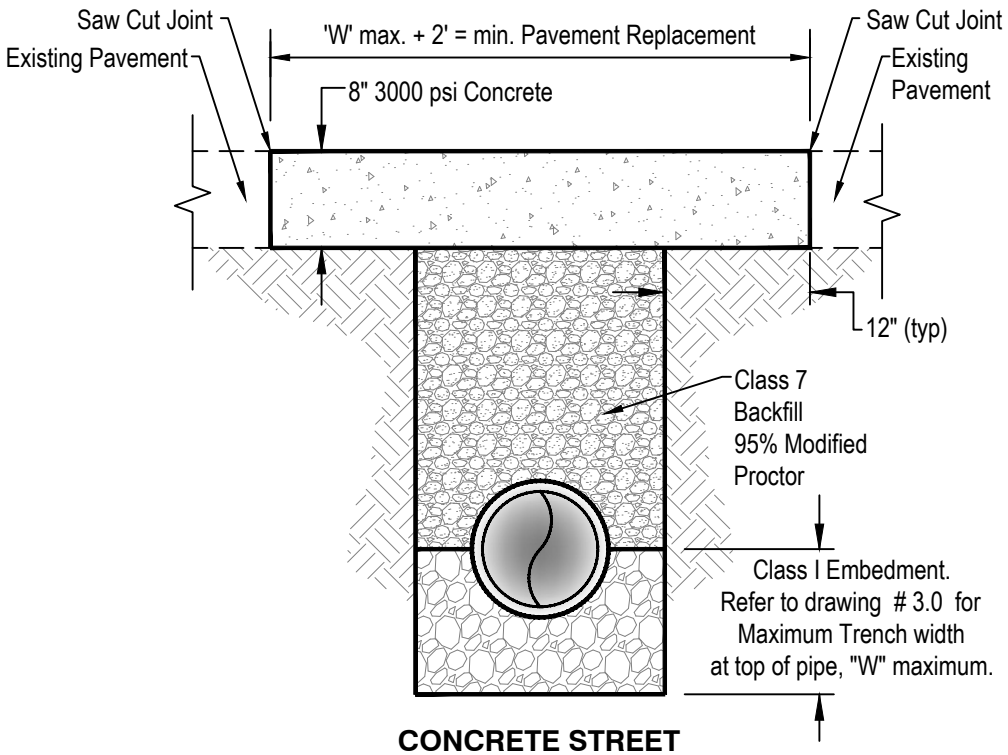
TYPICAL DWELLING SERVED BY A MAIN SEWER IN A BACK OR SIDE YARD LOCATED WITHIN AN EASEMENT

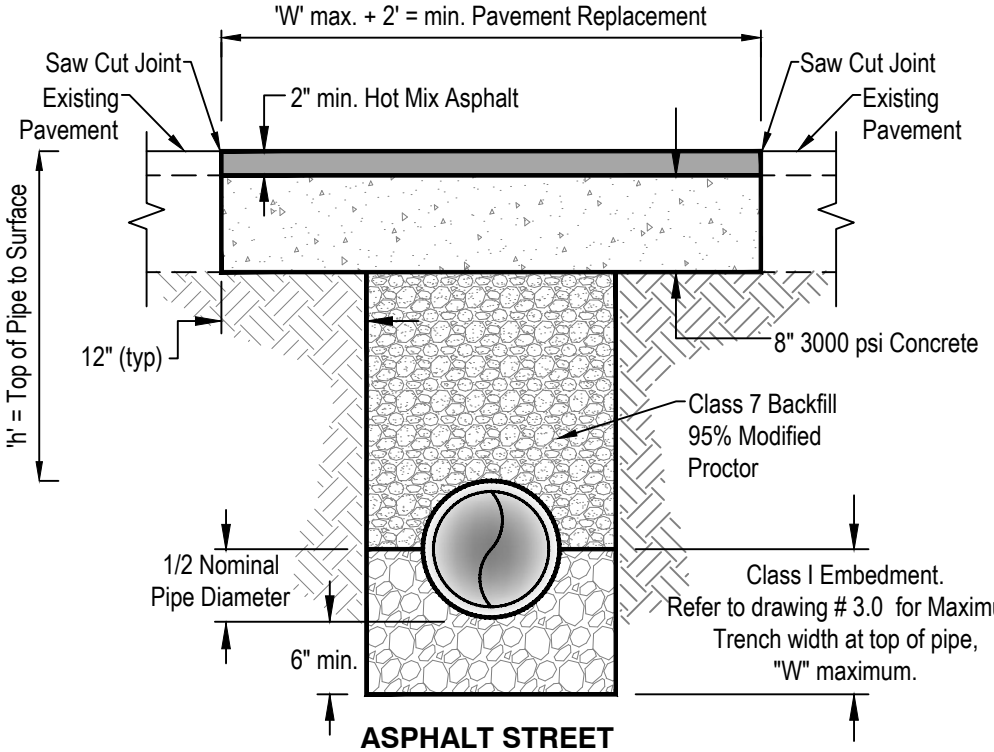
5.21

Prepared By: Scott Taylor
Updated: 7/30/2019 7:07:54 AM
Drawing Status: **APPROVED**
Filename: 5.21.dwg



CONCRETE STREET

Note: Apply Tack Coat On Concrete Cap & Sides Of Cut Prior To Placing Hot Mix Asphalt



ASPHALT STREET

Note: Maximum Pavement Replacement Payment width = 2' + "h" + "w" max

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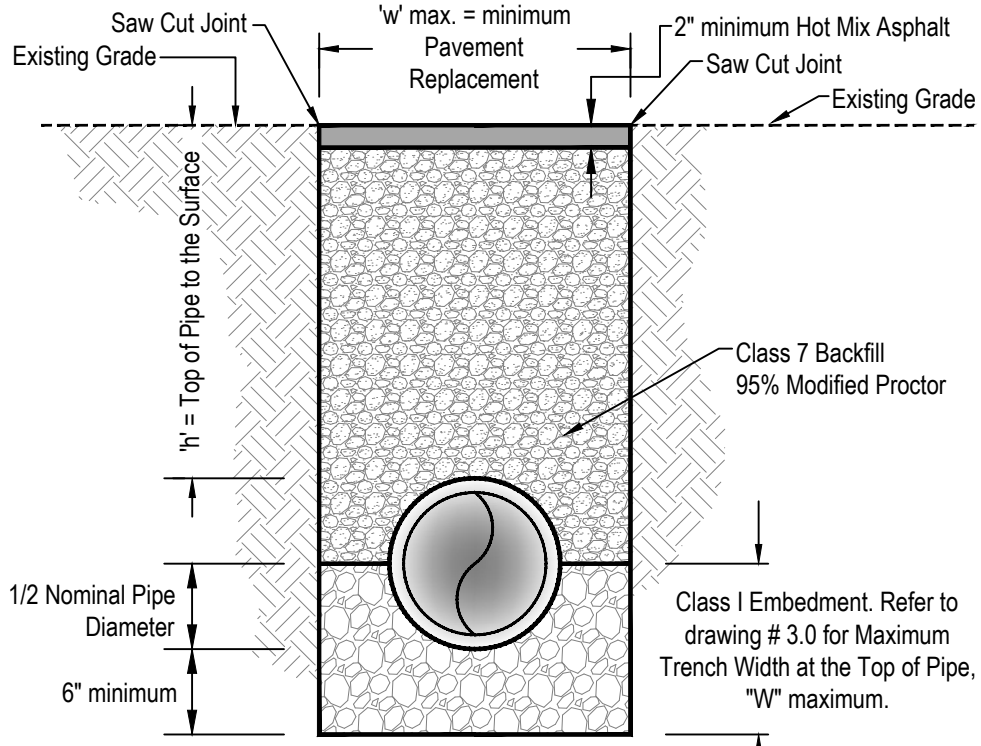
CITY AND COUNTY STREETS REPAIR DETAILS

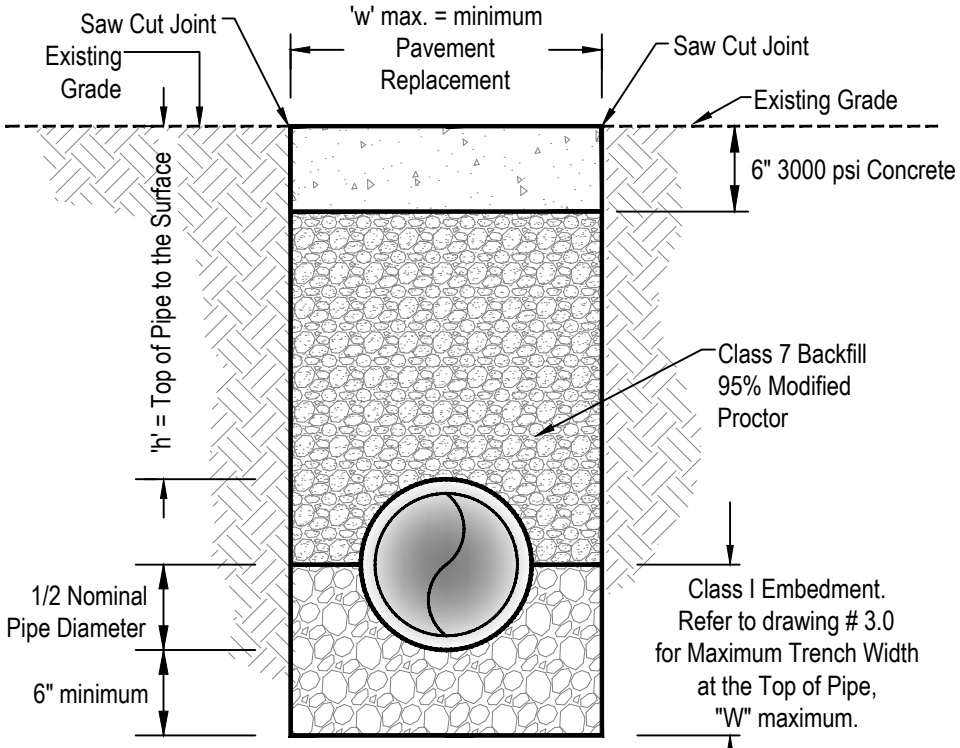
6.0

Prepared By: Scott Taylor
Updated: 7/30/2019 2:03:23 PM
Drawing Status: **APPROVED**
Filename: 6.0.dwg



ASPHALT ALLEY REPAIR

NOTE: Maximum Pavement Replacement Payment width = "w" max + "h"



CONCRETE ALLEY REPAIR

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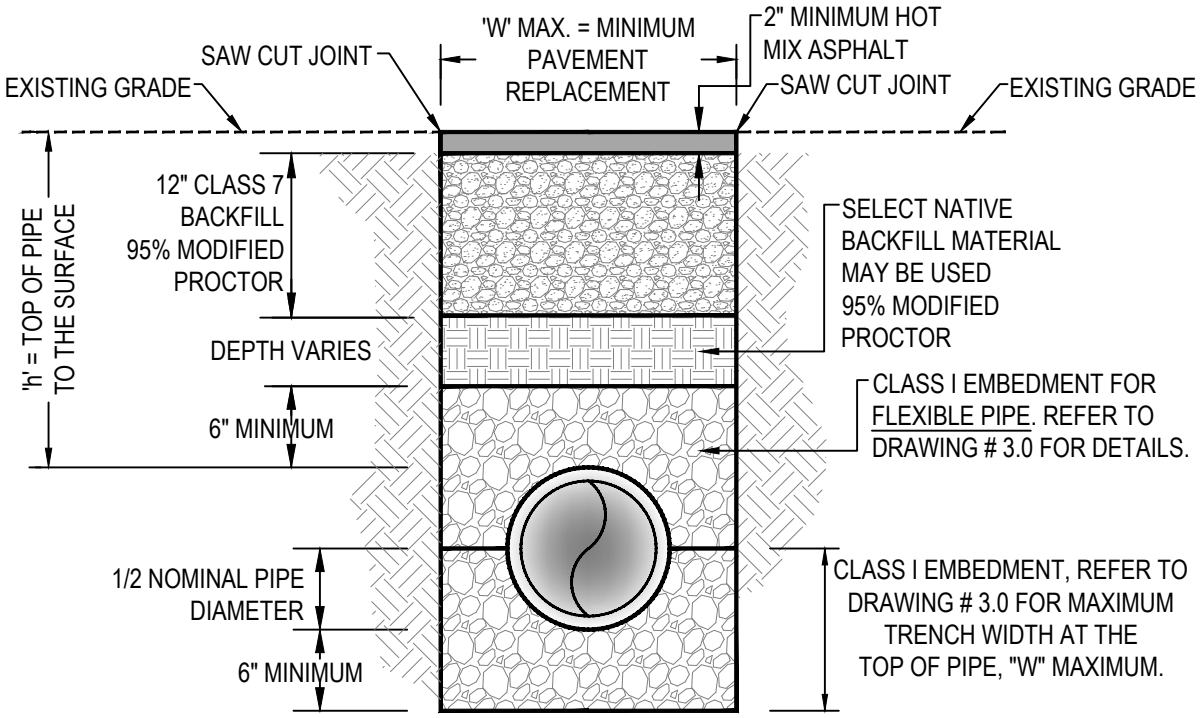
ALLEY REPAIR DETAIL

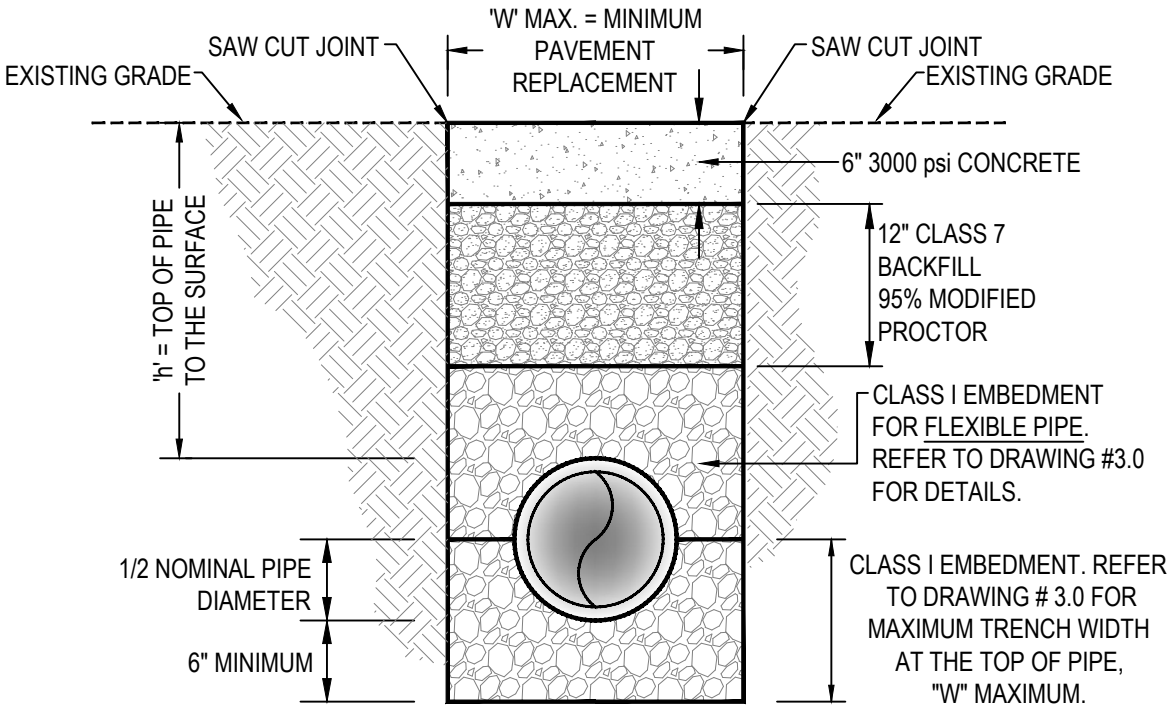
6.1

Prepared By: Scott Taylor
Updated: 7/31/2019 9:39:50 AM
Drawing Status: **APPROVED**
Filename: 6.1.dwg



ASPHALT DRIVE/PARKING AREA REPAIR

NOTE: MAXIMUM PAVEMENT REPLACEMENT PAYMENT WIDTH = "W" MAX + "h"



CONCRETE DRIVE/PARKING AREA REPAIR

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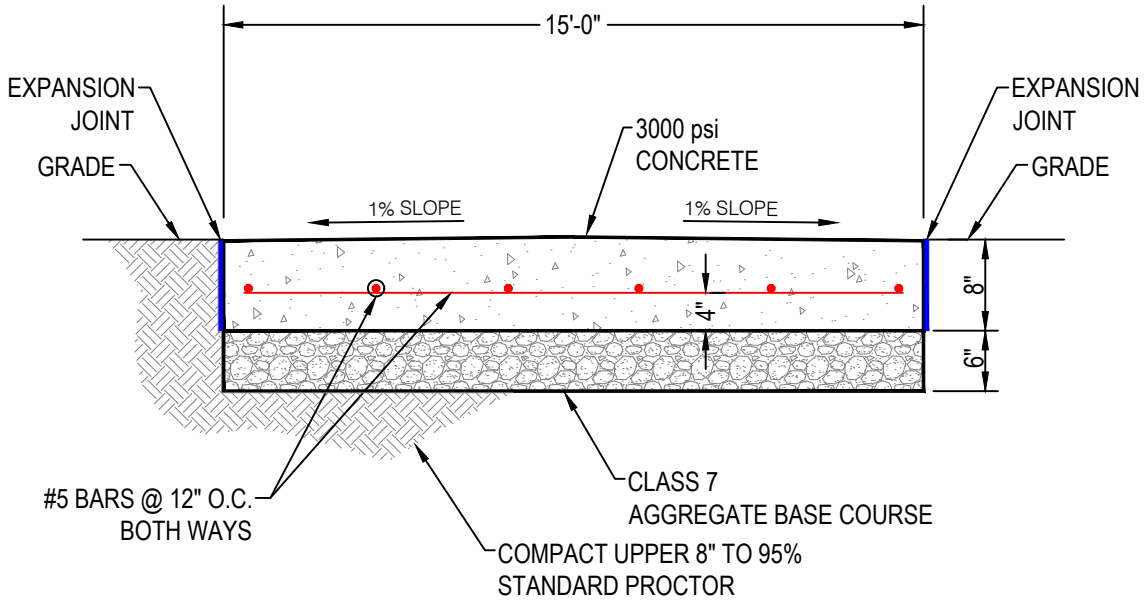
ASPHALT / CONCRETE DRIVE AND PARKING AREA REPAIR DETAILS

6.2

Prepared By: Scott Taylor
Updated: 7/31/2019 9:39:54 AM
Drawing Status: **APPROVED**
Filename: 6.2.dwg



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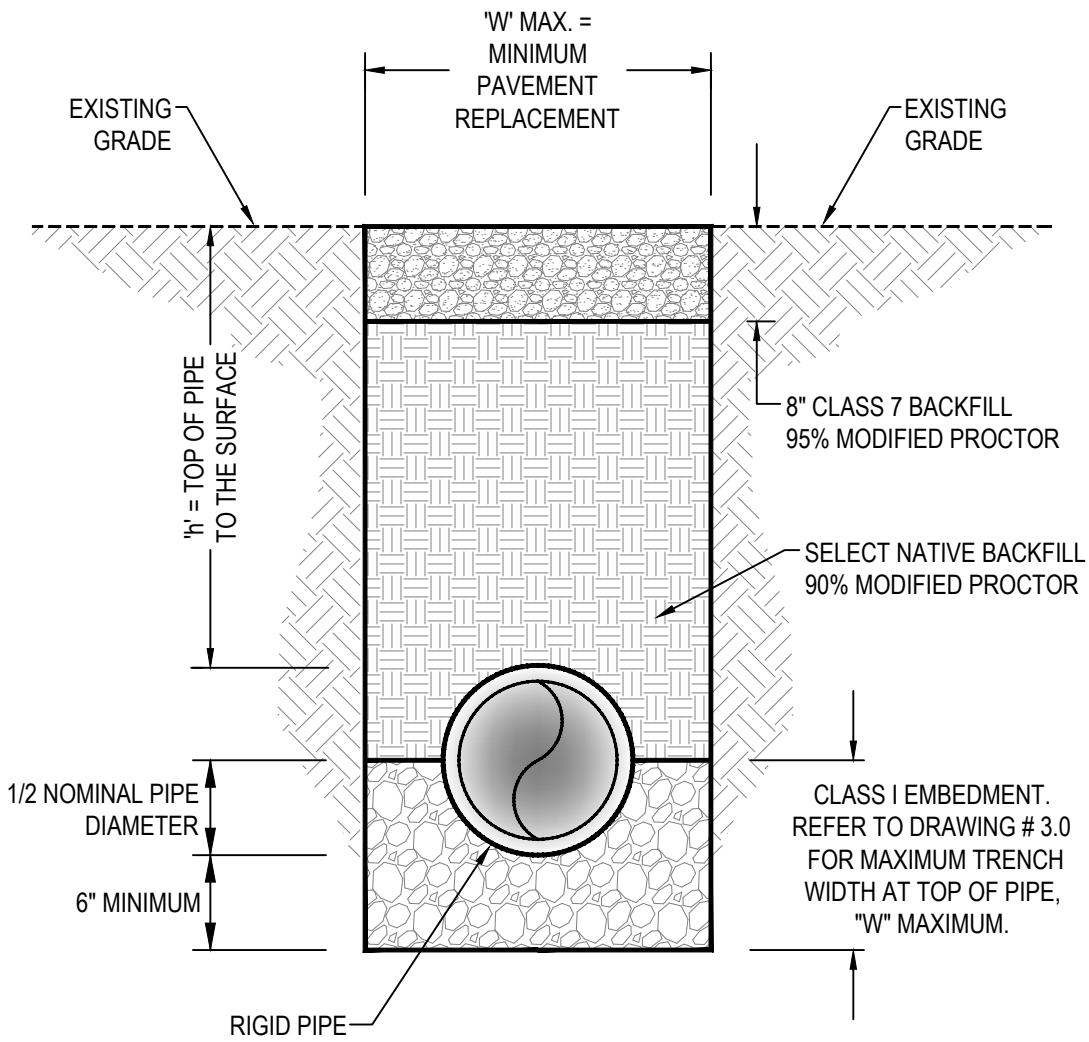
CONCRETE DRIVE SECTION NEW CONSTRUCTION

6.3

Prepared By: Andy Stallings
Updated: 7/31/2019 9:39:41 AM
Drawing Status: **APPROVED**
Filename: 6.3.dwg



NOTE: MAXIMUM PAVEMENT REPLACEMENT
PAYMENT WIDTH = "W" MAX. + "h"

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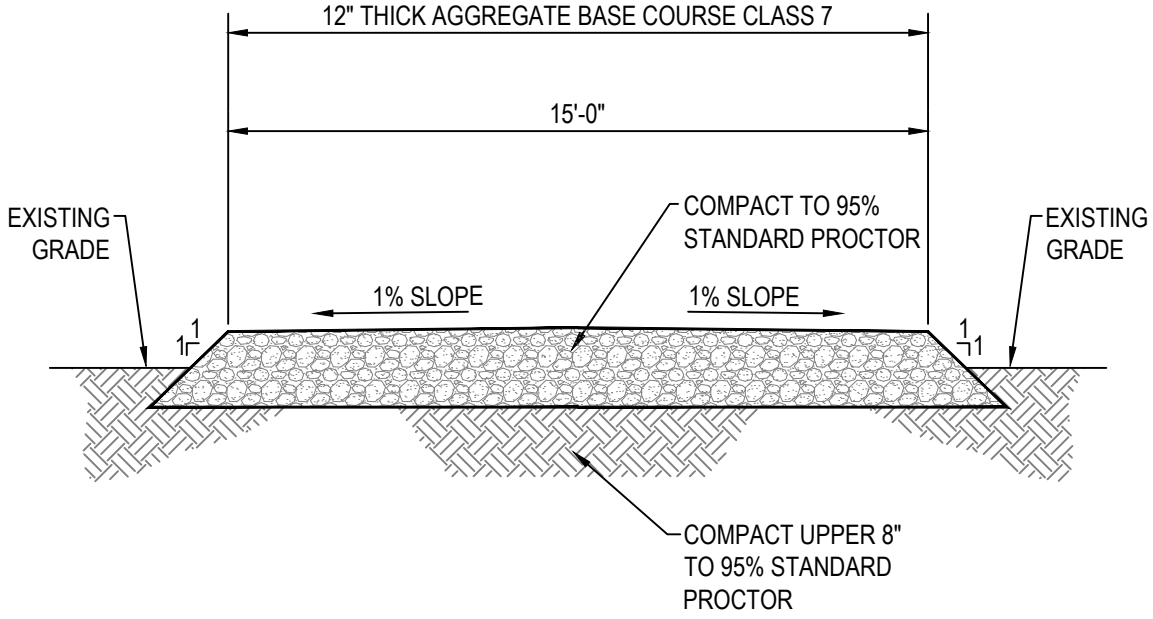
GRAVEL ALLEYS AND STREETS REPAIR DETAILS

6.4

Prepared By: Andy Stallings
Updated: 7/30/2019 2:16:08 PM
Drawing Status: **APPROVED**
Filename: 6.4.dwg



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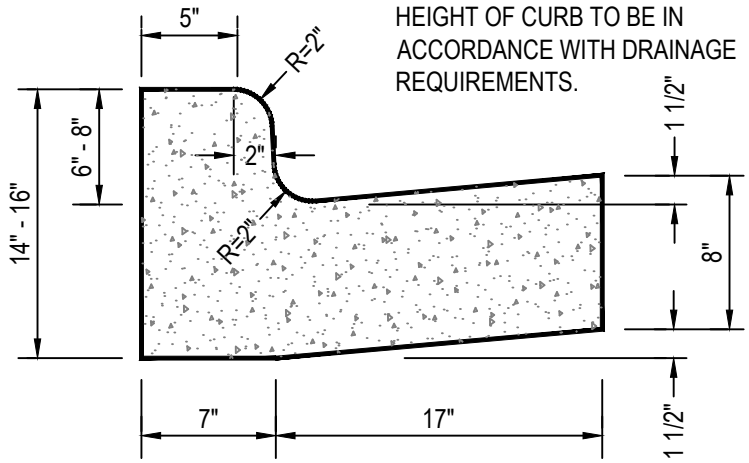
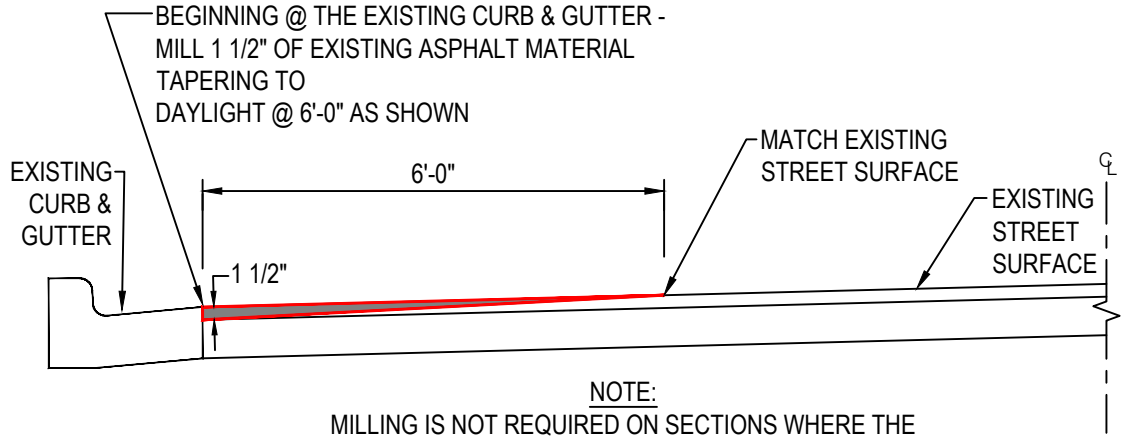
TYPICAL SECTION ACCESS DRIVE NEW CONSTRUCTION

6.5

Prepared By: Scott Taylor
Updated: 7/31/2019 9:39:35 AM
Drawing Status: **APPROVED**
Filename: 6.5.dwg

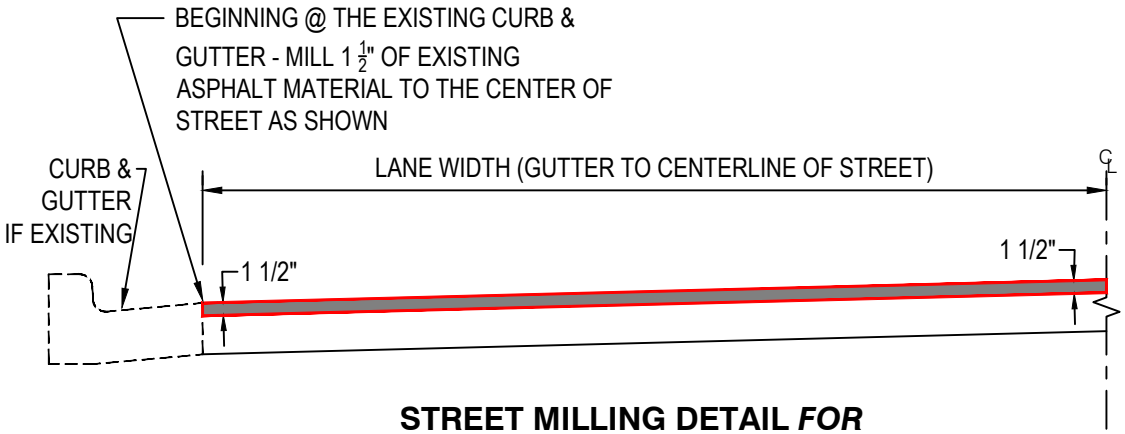


CLASS 1 & 2 UPRIGHT CURB AND GUTTER DETAIL



NOTE:
MILLING IS NOT REQUIRED ON SECTIONS WHERE THE CURB AND GUTTER ARE NOT EXISTING.

STREET MILLING DETAIL *FOR EXISTING CURB AND GUTTER* TWO LANE REPLACEMENT



STREET MILLING DETAIL *FOR* SINGLE LANE REPLACEMENT

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CURB AND GUTTER DETAILS INCLUDING STREET MILLING FOR EXISTING CURB AND GUTTER

6.6

Prepared By: Andy Stallings
Updated: 7/31/2019 9:40:06 AM
Drawing Status: **APPROVED**
Filename: 6.6.dwg

CHAIN LINK FENCE NOTES

Tension wires: Shall be secured to all terminal, pull, or corner posts with stretcher bar bands.

Brace rail: Shall be provided at all terminal, pull, or corner posts halfway between the top rail and ground level, and shall extend from such post to the first adjacent line post.

Fabric: All chain link fence fabric shall consist of woven wire in the form of approximately uniform square mesh, having parallel sides and horizontal and vertical diagonals of approximately uniform dimensions.

Gate Frame: Shall be constructed of tubular members assembled by use of malleable fittings or by welding. All gates shall have one horizontal support extending the width of the gate at the midpoints of vertical frame members. The complete frame shall be rigid and have ample strength to be free from sag and twist.

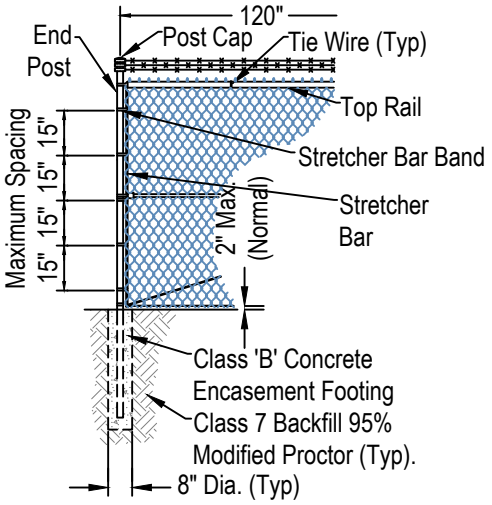
Hinges: Shall be of heavy pattern, of adequate strength for gate, with large bearing surfaces for clamping in position. The hinge shall be of the proper type to allow for 180 degree of swing. The hinge shall not twist or turn under the action of the gate. The gate shall be capable of being opened and closed easily by one person.

Latches and stops: Shall be provided for all gates. Gates shall have a drop bar latch. Latches shall be set in concrete and engage the plunger of the bar latch.

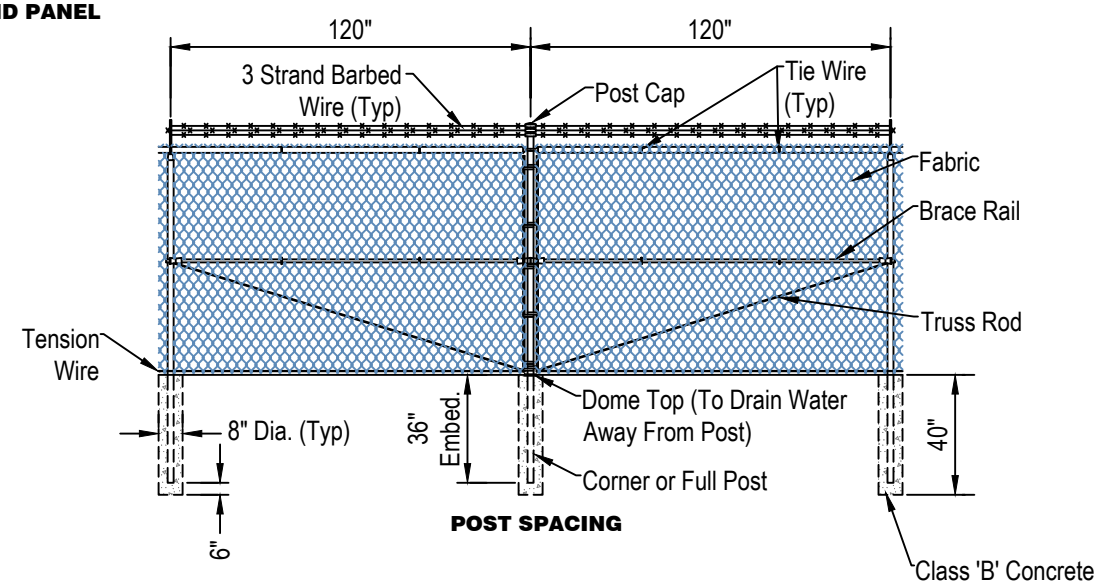
Expansion Sleeve: Shall be the outside type, minimum 6" in length and self centering. Minimum thickness of material from which sleeves shall be made will be .042".

Class "B" Concrete: Shall be required for the embedment of all posts and shall have a 28 day compressive strength of at least 3000 P.S.I.

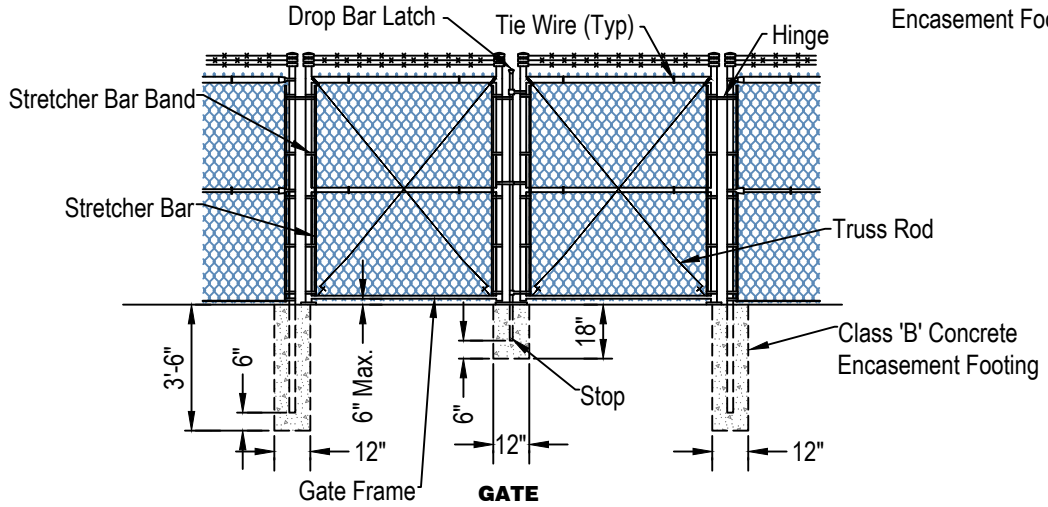
Posts: Shall be spaced equidistant on a maximum of 10'0" centers.



END PANEL



POST SPACING



GATE

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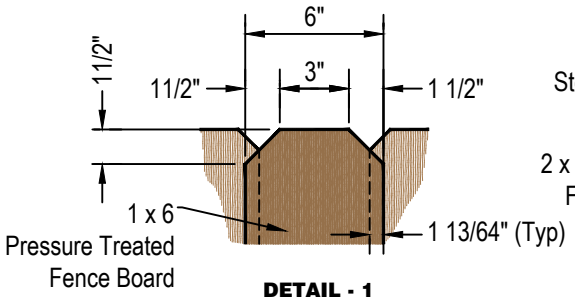
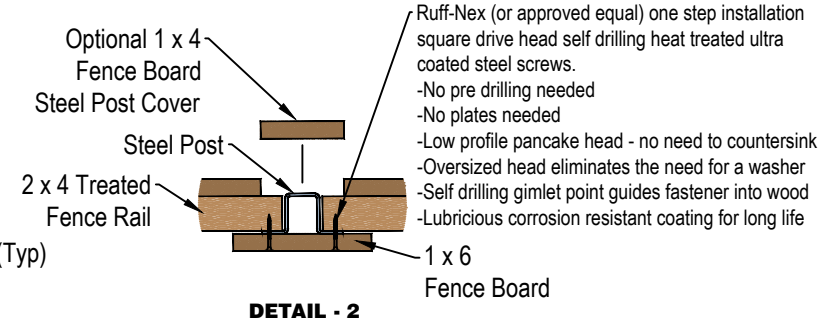
CHAIN LINK FENCE DETAILS

7.0

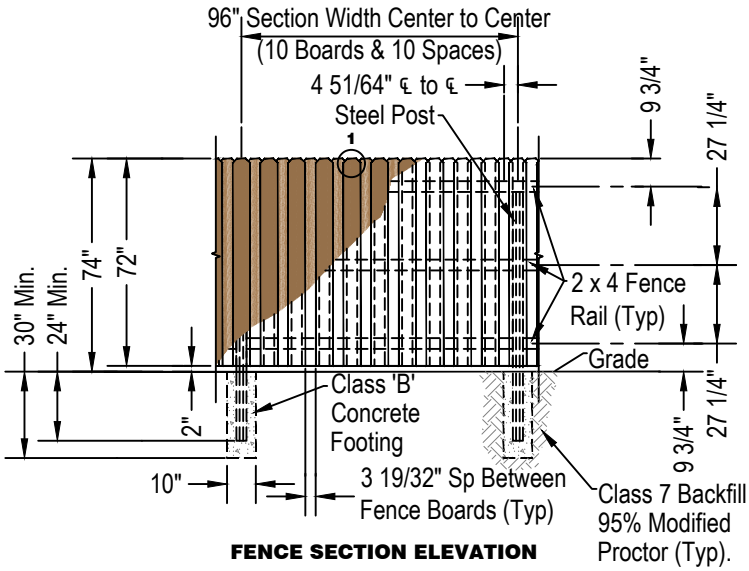
Prepared By: Scott Taylor
Updated: 8/6/2019 9:37:35 AM
Drawing Status: **APPROVED**
Filename: 7.0.dwg



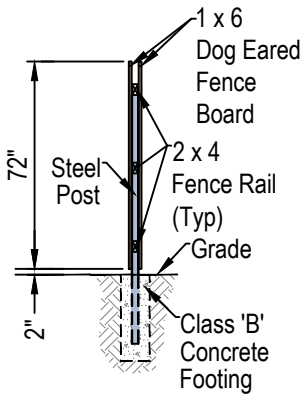
DETAIL - 1



DETAIL - 2



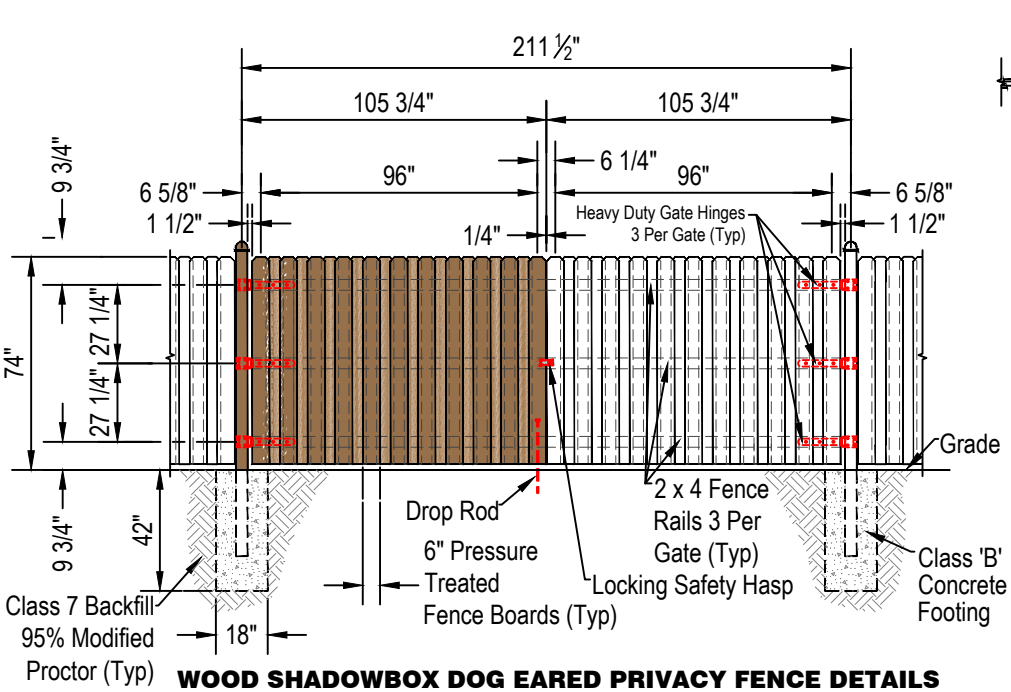
FENCE SECTION ELEVATION



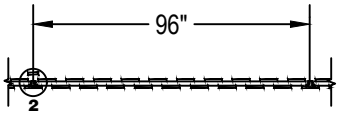
FENCE END VIEW

FENCE NOTES

Use three back rails (6' fence), two back rails (4', 5' fence), or 4 back rails (8' fence) for more hold-down points.
Use only hot-dipped galvanized, or stainless steel fasteners with a ring or spiral shank to minimize warp and rust stains.
Treat the surfaces of fence boards with a water-repellent solution to reduce the rate that moisture is absorbed and released.
This solution should also have a good UV inhibitor if you don't want the fence to gray.
Follow a regular maintenance program of cleaning and refinishing every few years with a "clear" or "toner" water repellent containing UV inhibitors. This will revitalize a dingy appearance caused by dirt, mildew or graying.



WOOD SHADOWBOX DOG EARED PRIVACY FENCE DETAILS



FENCE PLAN VIEW

GATE NOTES

1. Drive gates are to be made from full fence panels.
2. For security, drive gate hardware (hinges and drop rod) are to be installed on the inside of gate section per manufacturers instructions.
3. The Safety Hasp shall be a Bright Zinc Steel Westward 4" Key Locking Hasp model 4PE49 or approved equal.
4. Drive gate posts are to be 4 x 4 pressure treated posts. The hinges are to be mounted on the post flush, as shown.

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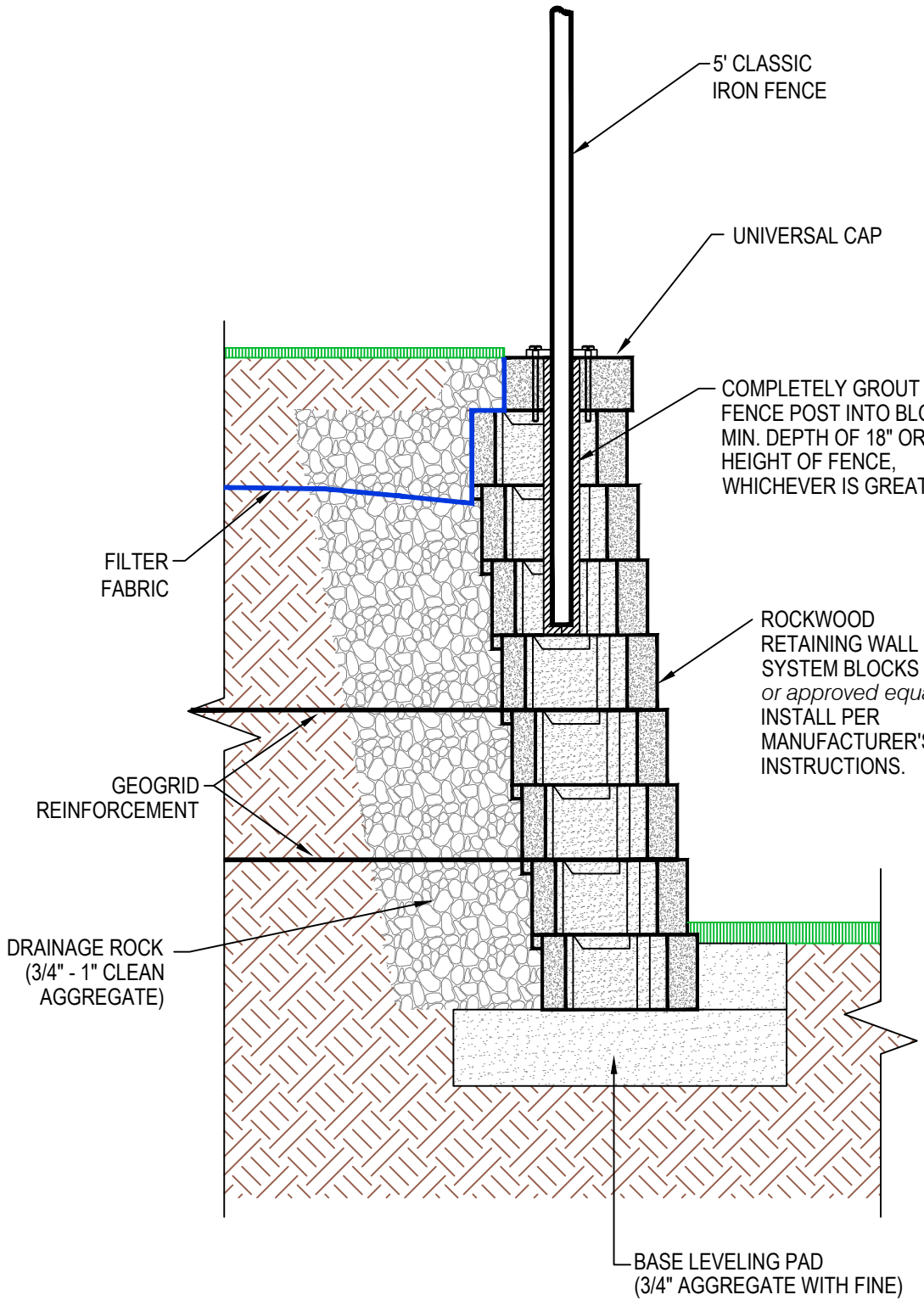
TYPICAL WOOD PRIVACY FENCE DETAILS

7.1

Prepared By: Scott Taylor
Updated: 7/31/2019 9:40:10 AM
Drawing Status: **APPROVED**
Filename: 7.1.dwg



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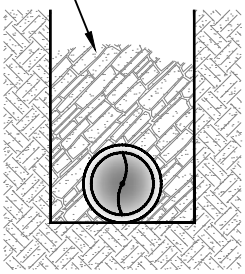
FENCES, POSTS AND GUARDRAILS DETAILS

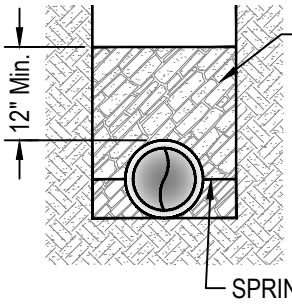
7.2

Prepared By: Scott Taylor
Updated: 7/31/2019 9:40:14 AM
Drawing Status: **APPROVED**
Filename: 7.2.dwg

TYPE 1

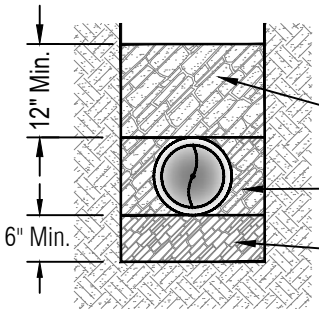


TYPE 2



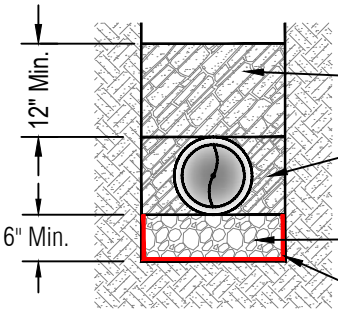
BACKFILL USING SELECT MATERIAL LIGHTLY COMPACTED TO THE SPRINGLINE OF THE PIPE
-BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE USING SELECT MATERIAL

TYPE 3



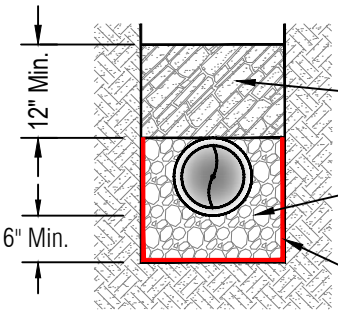
- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE, USING SELECT MATERIAL.
- BACKFILL USING SELECT MATERIAL LIGHTLY COMPACTED TO THE TOP OF THE PIPE.
- BED PIPE USING SELECT MATERIAL A MINIMUM OF 6".

TYPE 4



- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE USING SELECT MATERIAL.
- BACKFILL USING SELECT MATERIAL COMPACTED TO 80% STANDARD PROCTOR, AASHTO T99 TO THE TOP OF THE PIPE.
- BED PIPE USING CLASS I EMBEDMENT MATERIAL TO A DEPTH OF 1/8 THE PIPE DIAMETER A MINIMUM OF 6".
- USE FILTER FABRIC AS SHOWN HERE AS A BOLD RED LINE.

TYPE 5



- BACKFILL USING SELECT MATERIAL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE.
- BACKFILL USING CLASS I EMBEDMENT COMPACTED TO 90% STANDARD PROCTOR, AASHTO T99 TO TOP OF PIPE.
- BED PIPE USING CLASS I EMBEDMENT MATERIAL TO A DEPTH OF 1/8 PIPE DIAMETER A MINIMUM OF 6".
- USE FILTER FABRIC, AS SHOWN HERE WITH A BOLD RED LINE.

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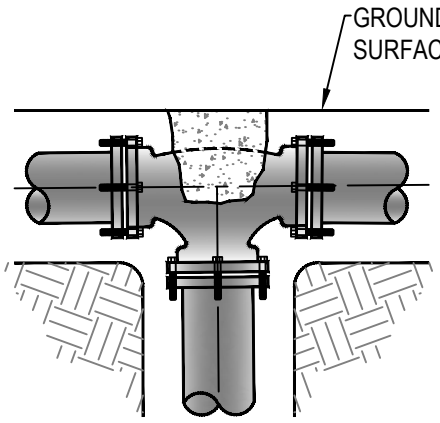
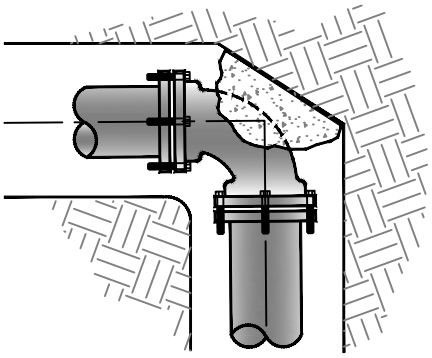
FORCE MAIN LAYING CONDITIONS DETAILS

8.0

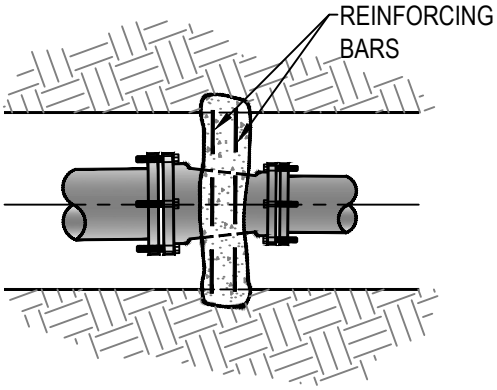
Prepared By: Scott Taylor
Updated: 7/31/2019 9:40:20 AM
Drawing Status: **APPROVED**
Filename: 8.0.dwg



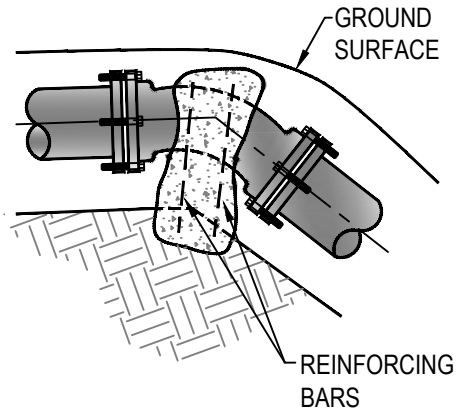
BLOCKING FOR TEE



HORIZONTAL BENDS

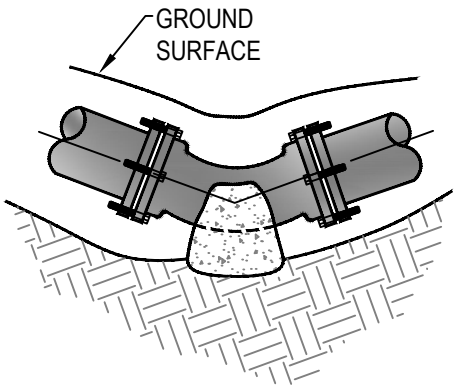


THRUST SUPPORT FOR REDUCER CONNECTION



THRUST BLOCKING NOTES:

- ALL BLOCKING SHALL BE AGAINST UNDISTURBED HAND DUG SOIL.
- WHERE SOIL CONDITIONS MAKE IT NECESSARY TO POUR CONCRETE BLOCKING OVER JOINTS, THE ENDS OF THE ADJACENT PIPES MUST HAVE A KICKER BLOCK TO RESIST ANY MOVEMENT OF THESE JOINTS.



VERTICAL BENDS

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THRUST BLOCKING DETAILS

8.1

Prepared By: Scott Taylor
Updated: 7/12/2019 9:47:09 AM
Drawing Status: **APPROVED**
Filename: 8.1.dwg

FITTING	THRUST PER 100 psi PRESSURE THRUST (tons)									
	6"	8"	12"	16"	20"	24"	30"	36"	42"	48"
11 1/4°	0.3	0.5	1.1	2.0	3.1	4.4	6.9	10.0	13.6	17.7
15	0.4	0.7	1.5	2.6	4.1	5.9	9.2	13.3	18.1	23.6
22 1/2°	0.6	1.0	2.2	3.9	6.1	8.8	13.8	19.9	27.0	35.3
30	0.7	1.3	2.9	5.2	8.1	11.7	18.3	26.3	35.3	46.8
45	1.1	1.9	4.3	7.7	12.0	17.3	27.1	39.0	53.0	69.2
90	2.0	3.6	8.0	14.2	22.2	32.0	50.0	72.0	98.0	128.0
PLUG (DEAD END)	1.4	2.5	5.7	10.1	15.7	22.6	35.3	50.3	69.3	90.5

TYPE OF SOIL	SUGGESTED SAFE BEARING VALUES (TONS/SQ. FT.)
SOLID ROCK	25
HARD SLATE	6
MEDIUM SHALE	4
SOFT SHALE	2
DRY CLAY GRAVEL	4
SOFT CLAY	1.5
DRY SAND OR LOAM	2.5
WET CLAY	0.75

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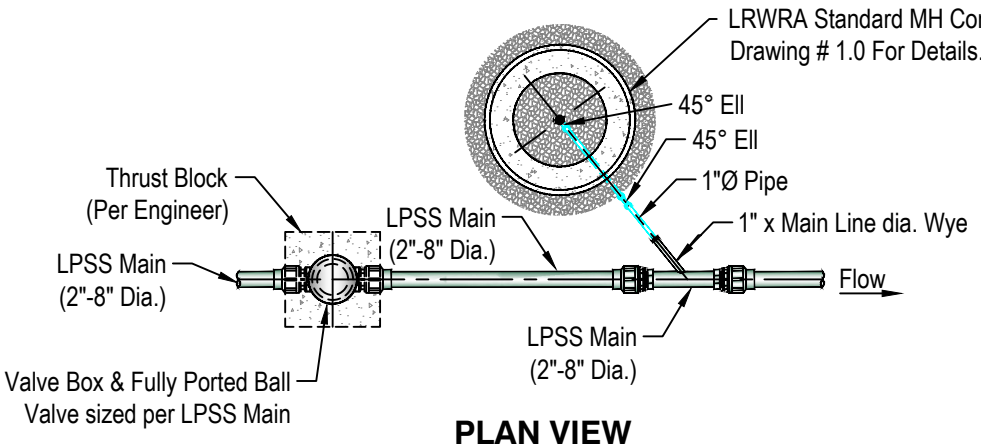
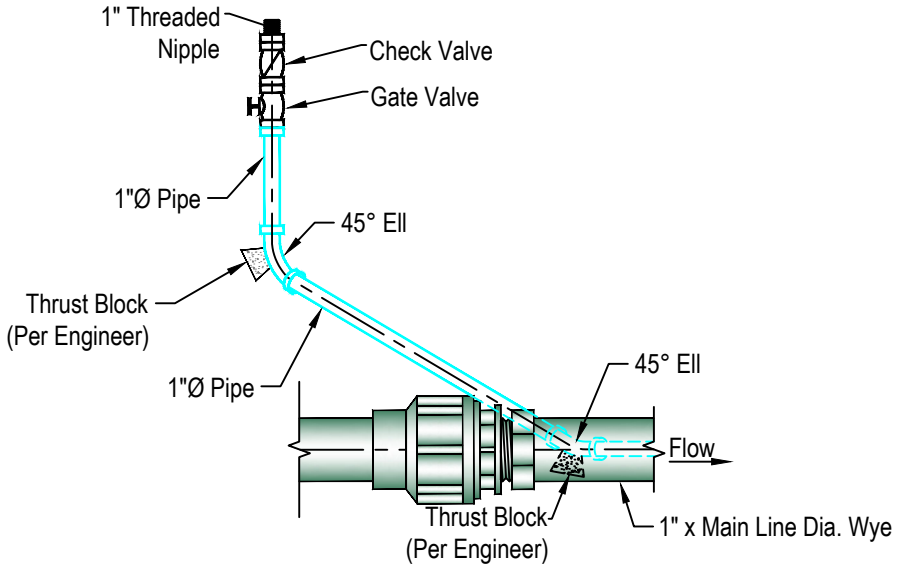
CONCRETE THRUST BLOCK AND COLLAR BEARING TABLE

8.2

Prepared By: Scott Taylor
Updated: 7/15/2019 1:13:18 PM
Drawing Status: **APPROVED**
Filename: 8.2.dwg

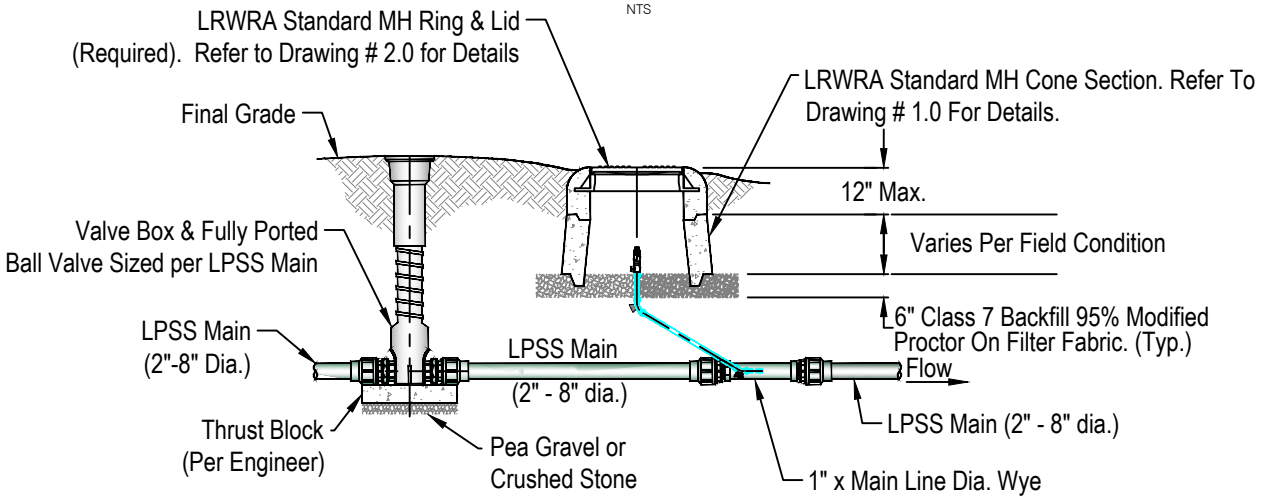


PLAN VIEW



ENLARGEMENT

NTS



SECTION

LITTLE ROCK
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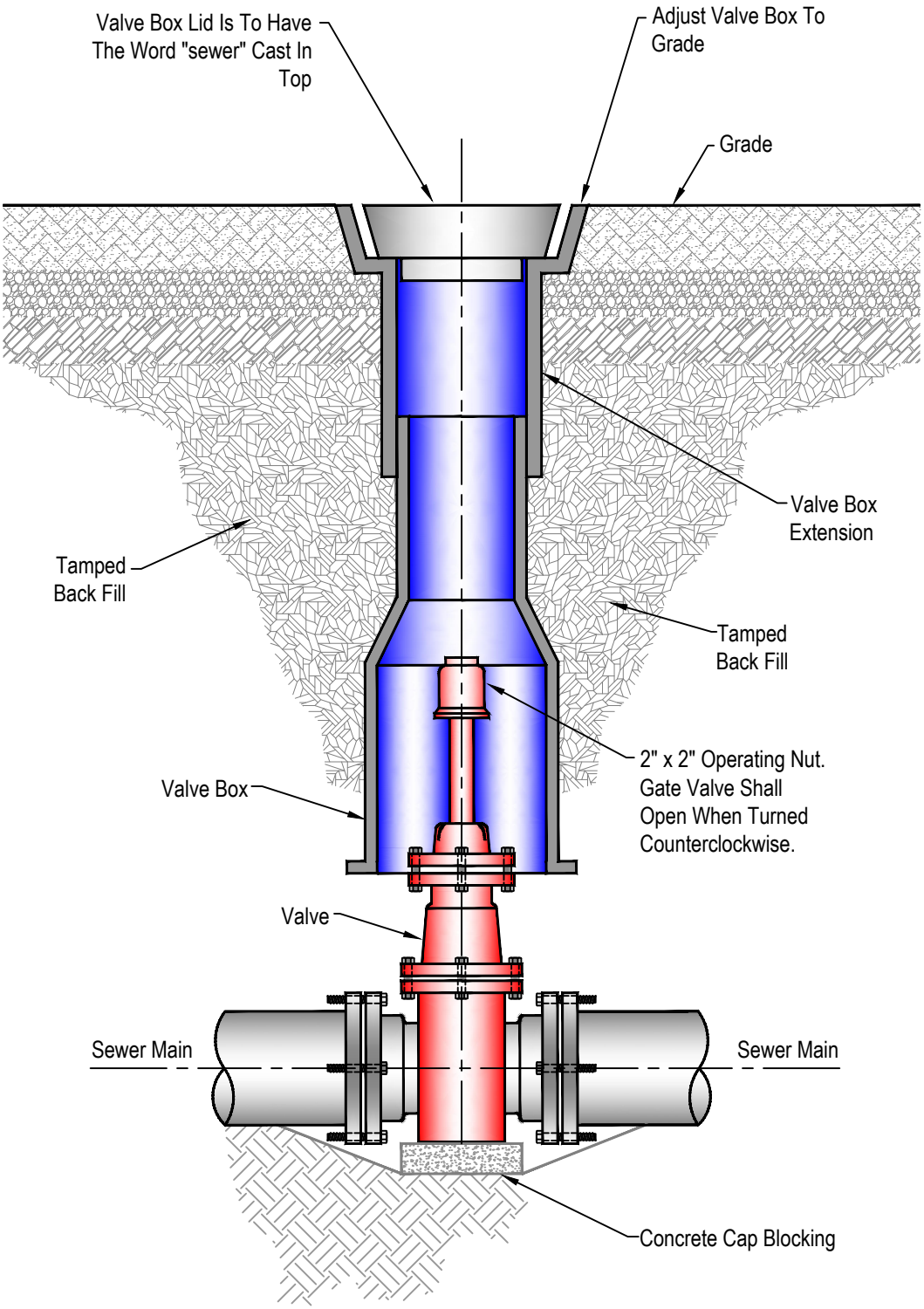
TYPICAL FLUSHING STATION CONNECTION

8.3

Prepared By: Scott Taylor
Updated: 7/31/2019 9:40:23 AM
Drawing Status: **APPROVED**
Filename: 8.3.dwg



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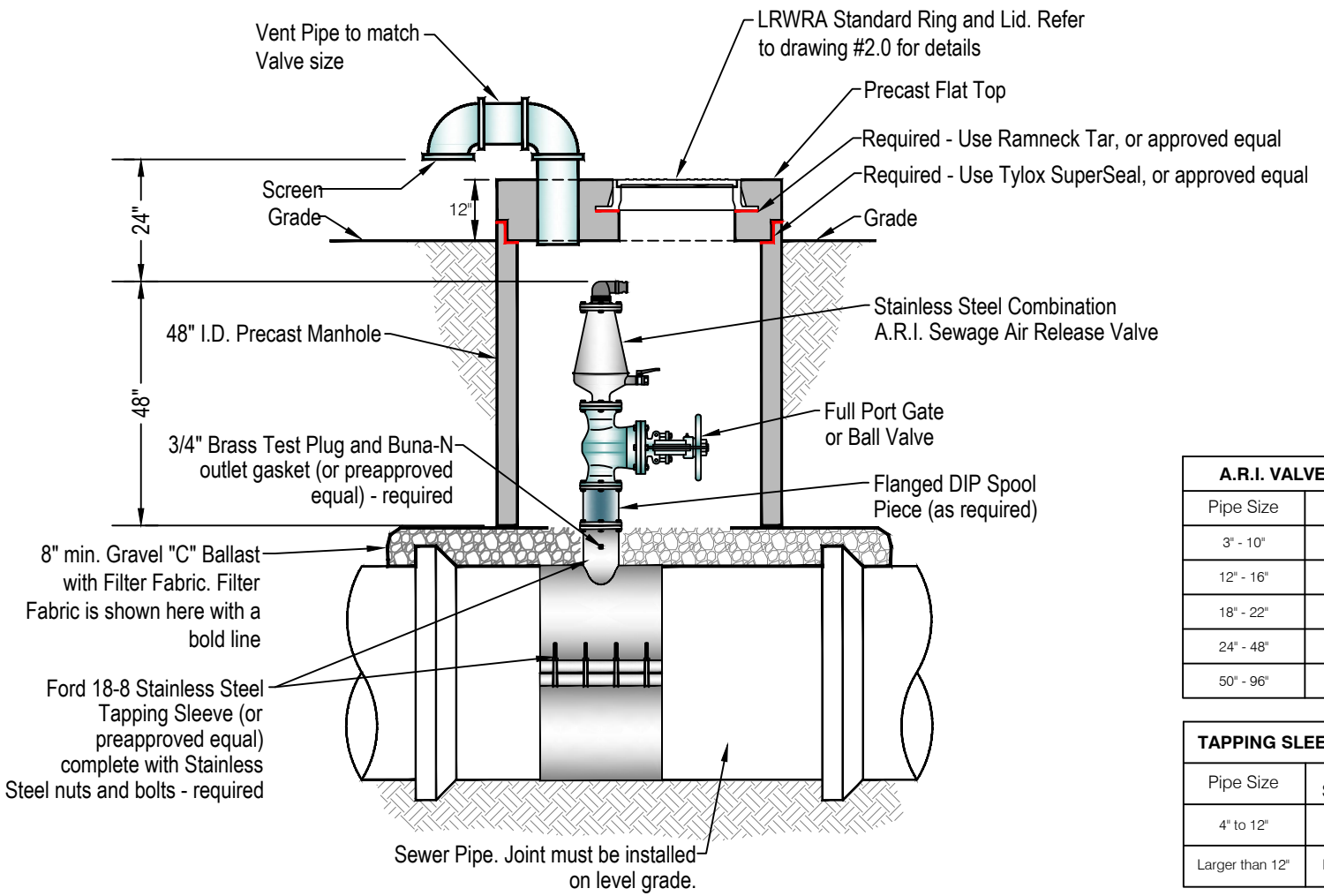
GATE VALVE DETAIL

8.4

Prepared By: Scott Taylor
Updated: 8/6/2019 10:18:35 AM
Drawing Status: **APPROVED**
Filename: 8.4.dwg



A.R.I. VALVE SIZING	
Pipe Size	Valve Size
3" - 10"	2"
12" - 16"	3"
18" - 22"	4"
24" - 48"	6"
50" - 96"	8"

TAPPING SLEEVE SIZING	
Pipe Size	Tapping Sleeve Size
4" to 12"	Pipe Size x 2
Larger than 12"	Pipe Size x 4

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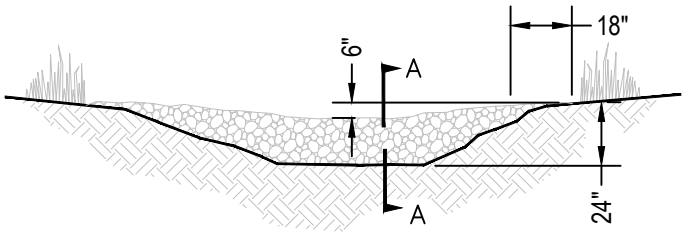
COMBINATION SEWAGE - AIR RELEASE VALVE DETAILS

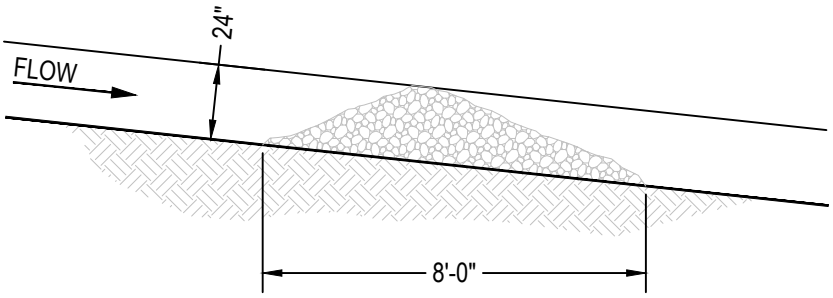
8.5

Prepared By: Scott Taylor
Updated: 8/6/2019 10:20:15 AM
Drawing Status: **APPROVED**
Filename: 8.5.dwg



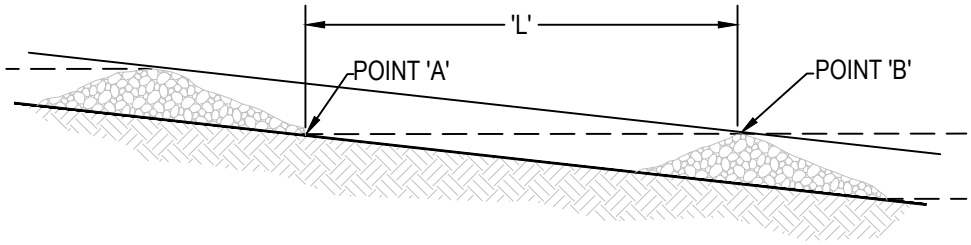
VIEW LOOKING UP STREAM

NOTE: KEY STONE INTO THE DITCH BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 18" TO PREVENT OVERFLOW AROUND DAM.



SECTION A-A

'L' = THE DISTANCE SUCH THAT POINTS 'A' AND 'B' ARE OF EQUAL ELEVATION.



SPACING BETWEEN CHECK DAMS

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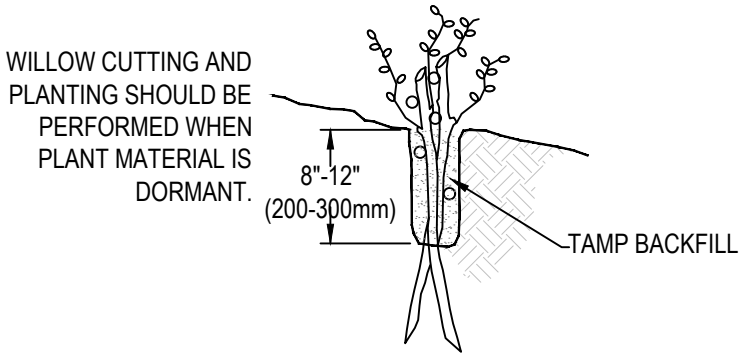
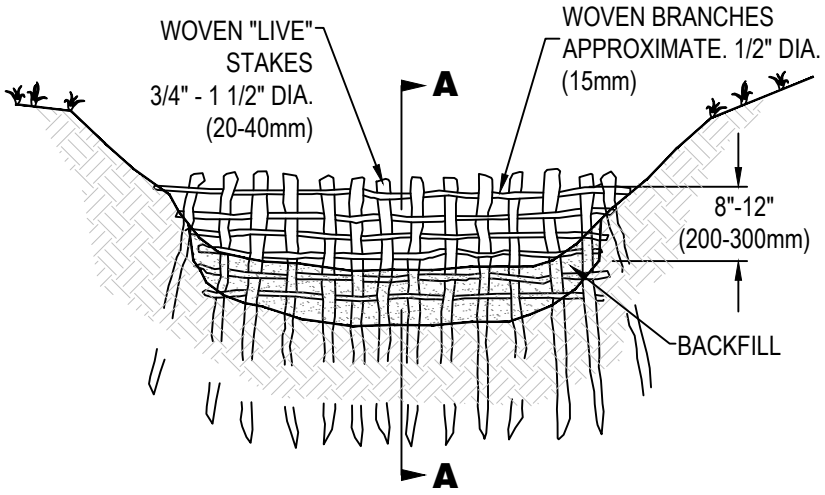
ROCK CHECK DAM

9.0

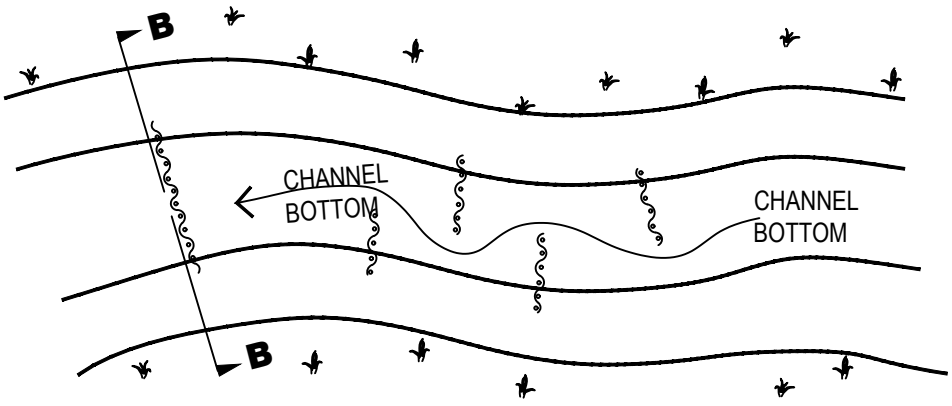
Prepared By: Andy Stallings
Updated: 7/16/2019 1:22:36 PM
Drawing Status: **APPROVED**
Filename: 9.0.dwg



SECTION A - A



SECTION B - B



WOVEN WILLOW (LIVE) CHECKDAMS ACT AS VELOCITY DISSIPATORS TO REDUCE GULLY DOWNCUTTING

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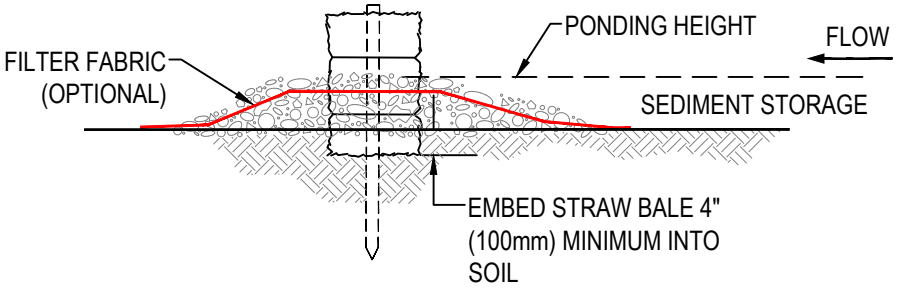
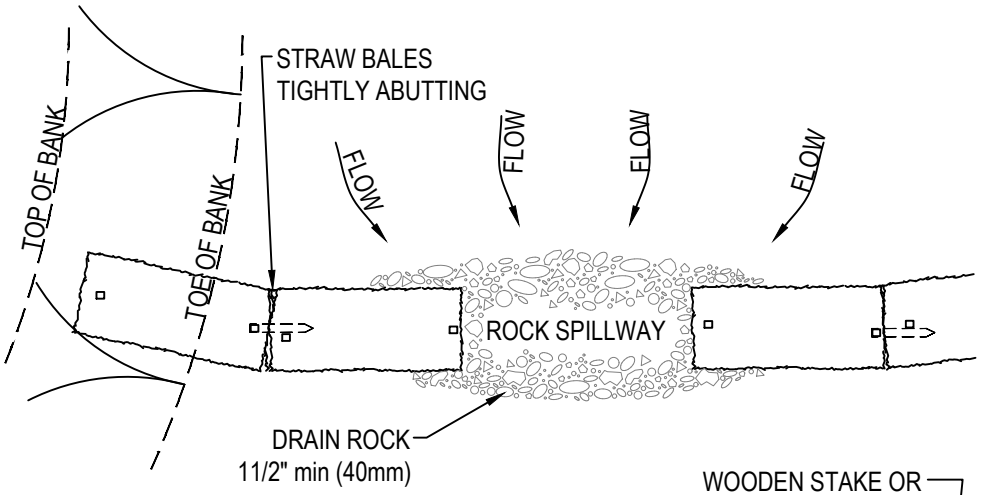
WOVEN WILLOW CHECK DAM

9.1

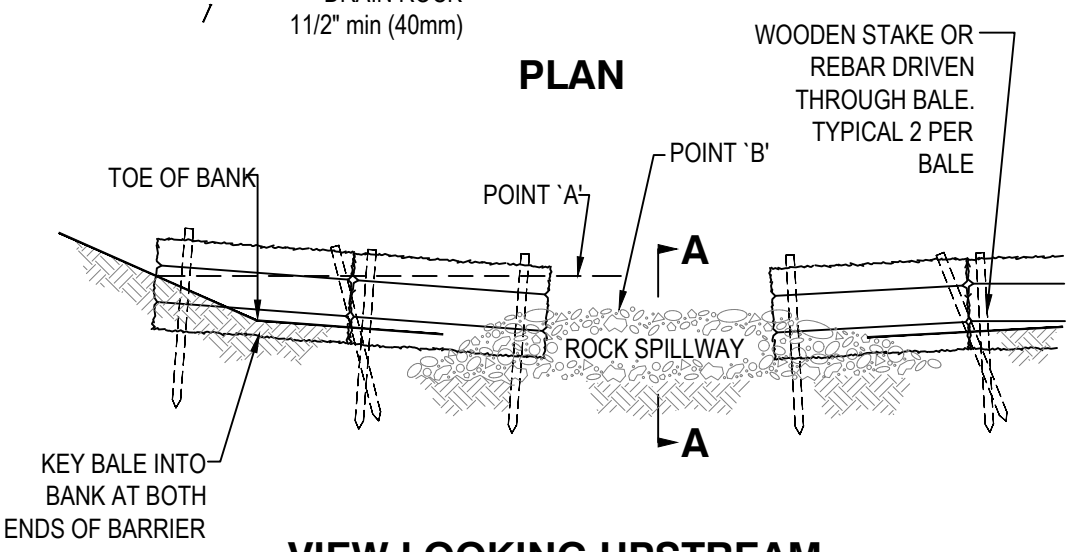
Prepared By: Andy Stallings
Updated: 8/6/2019 10:42:30 AM
Drawing Status: **APPROVED**
Filename: 9.1.dwg



SECTION A - A



PLAN



VIEW LOOKING UPSTREAM

NOTES:

1. PLACE BALES PERPENDICULAR TO FLOW.
2. EMBED THE BALE 4" (100mm) INTO THE SOIL AND "KEY" THE END BALES INTO THE CHANNEL BANKS TO PREVENT FLOW AROUND THE BALES.
3. BALES PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING.
4. POINT "A" SHALL BE HIGHER THAN POINT "B".
5. SPILLWAY HEIGHT SHALL NOT EXCEED 24" (0.6m).

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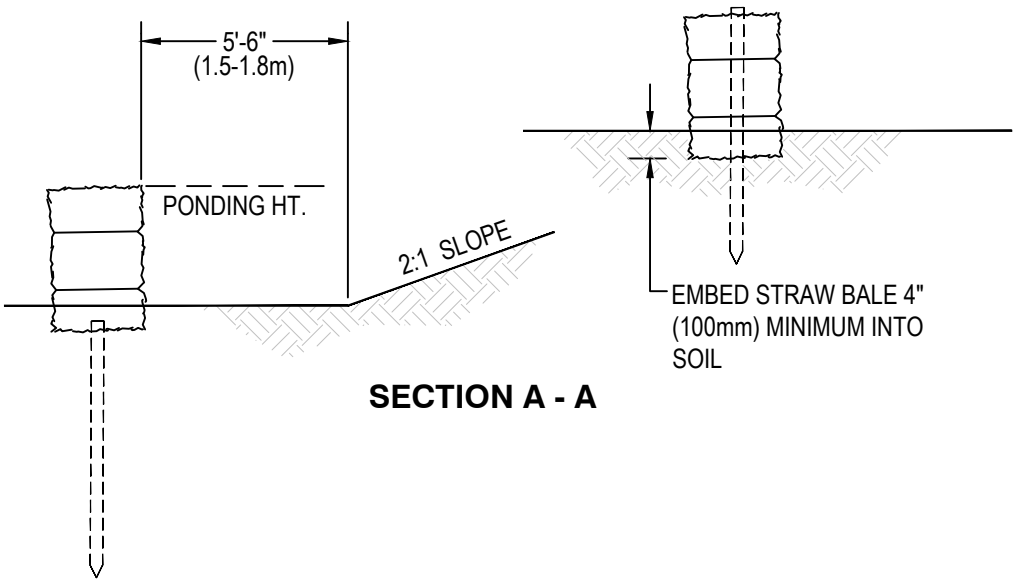
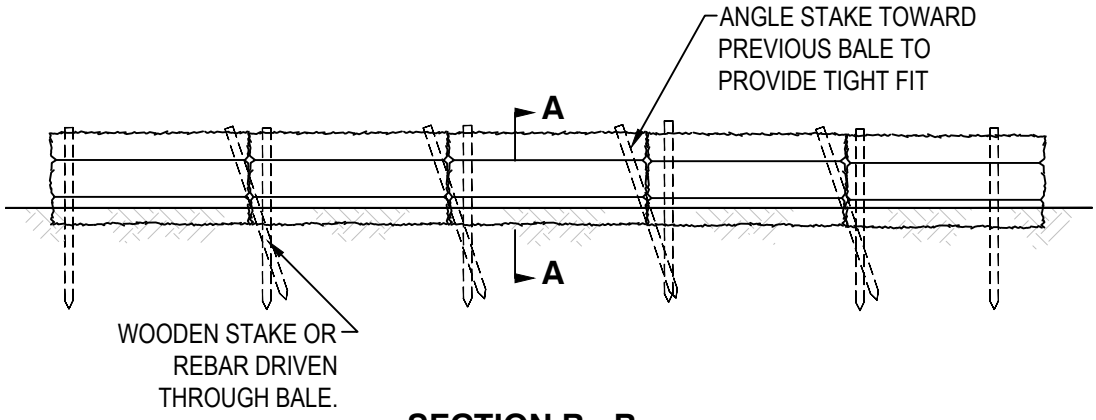
SEMI-PERVIOUS STRAW BALE SEDIMENT BARRIER

9.2

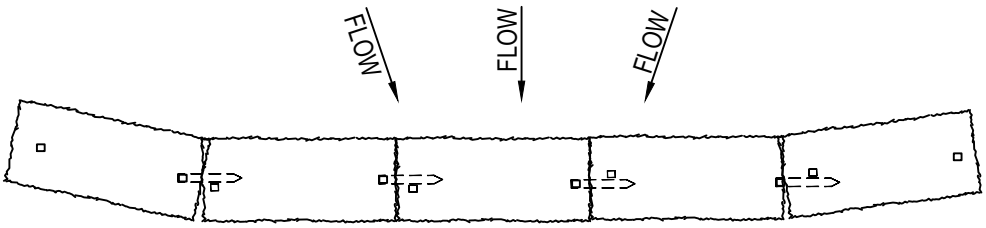
Prepared By: Andy Stallings
Updated: 7/31/2019 9:40:32 AM
Drawing Status: **APPROVED**
Filename: 9.2.dwg



SECTION A - A



SECTION B - B



PLAN

NOTES:
1. THE STRAW BALES SHALL BE PLACED ON SLOPE CONTOUR.
2. BALES TO BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING.
3. KEY IN BALES TO PREVENT EROSION OR FLOW UNDER BALES.

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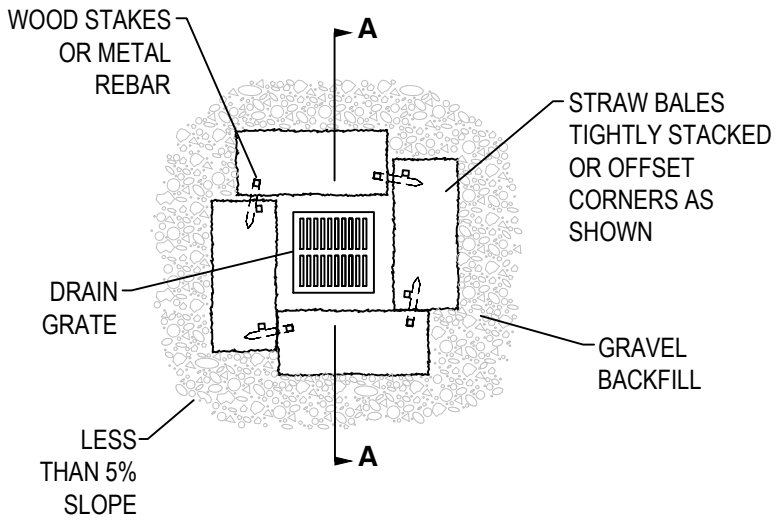
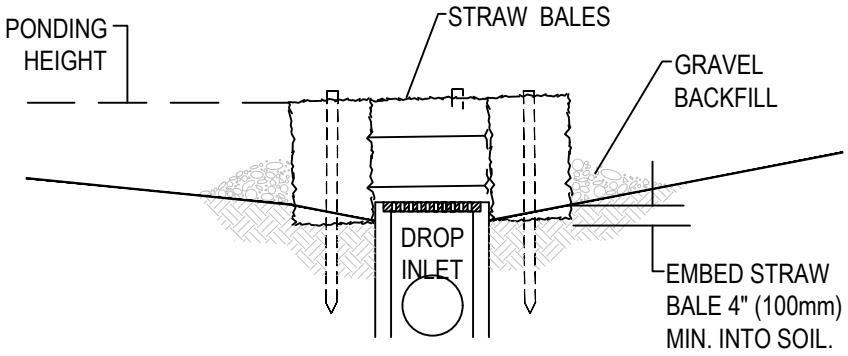
STRAW BALE DIKE

9.3

Prepared By: Scott Taylor
Updated: 7/16/2019 1:56:28 PM
Drawing Status: **APPROVED**
Filename: 9.3.dwg



PLAN VIEW



SECTION A-A

NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EMBED THE BALES 4" (100mm) INTO THE SOIL AND OFFSET CORNERS OR PLACE BALES WITH ENDS TIGHTLY ABUTTING. GRAVEL BACKFILL WILL PREVENT EROSION OR FLOW AROUND THE BALES.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

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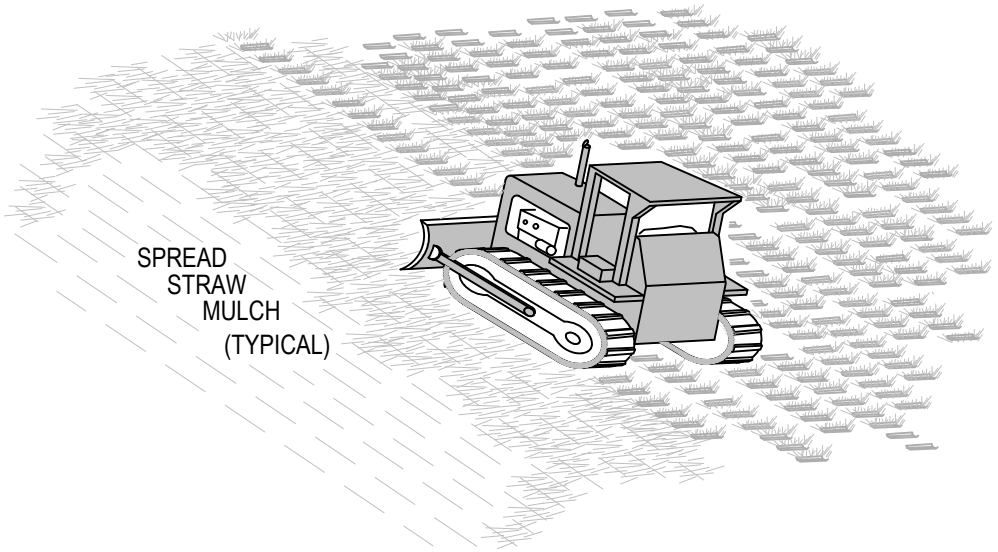
STRAW BALE / GRAVEL DROP INLET SEDIMENT BARRIER

9.4

Prepared By: Scott Taylor
Updated: 7/16/2019 2:27:41 PM
Drawing Status: **APPROVED**
Filename: 9.4.dwg



STRAW ANCHORING

`TRACKING' WITH MACHINERY ON
SANDY SOIL PROVIDES ROUGHENING
WITHOUT UNDUE COMPACTION.

NOTES:
1. ROUGHEN SLOPE WITH BULLDOZER
2. BROADCAST SEED AND FERTILIZER.
3. SPREAD STRAW MULCH 3" (76mm) THICK.
   (2 1/2 TONS PER ACRE)
4. PUNCH STRAW MULCH INTO SLOPE BY
   RUNNING BULLDOZER UP AND DOWN SLOPE.

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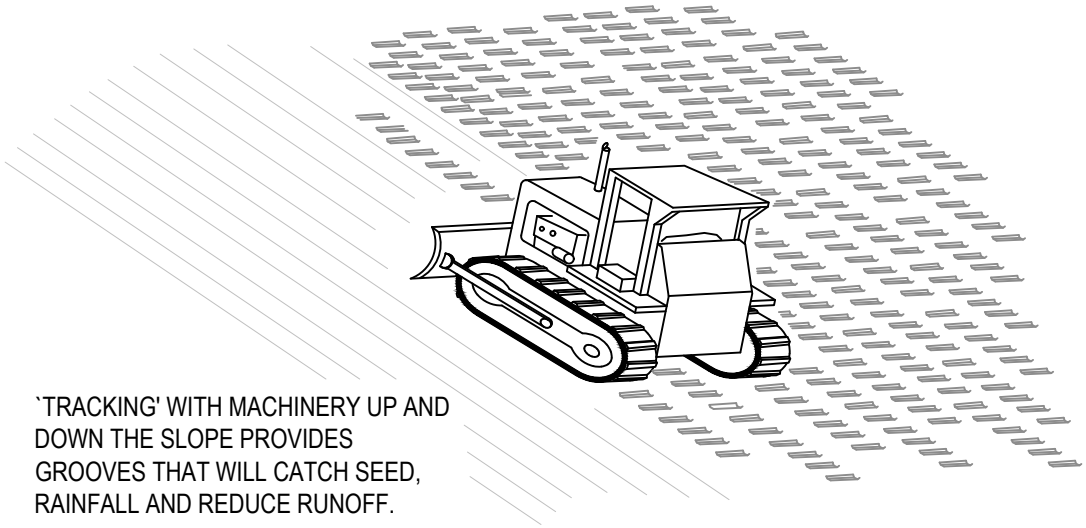
STRAW ANCHORING

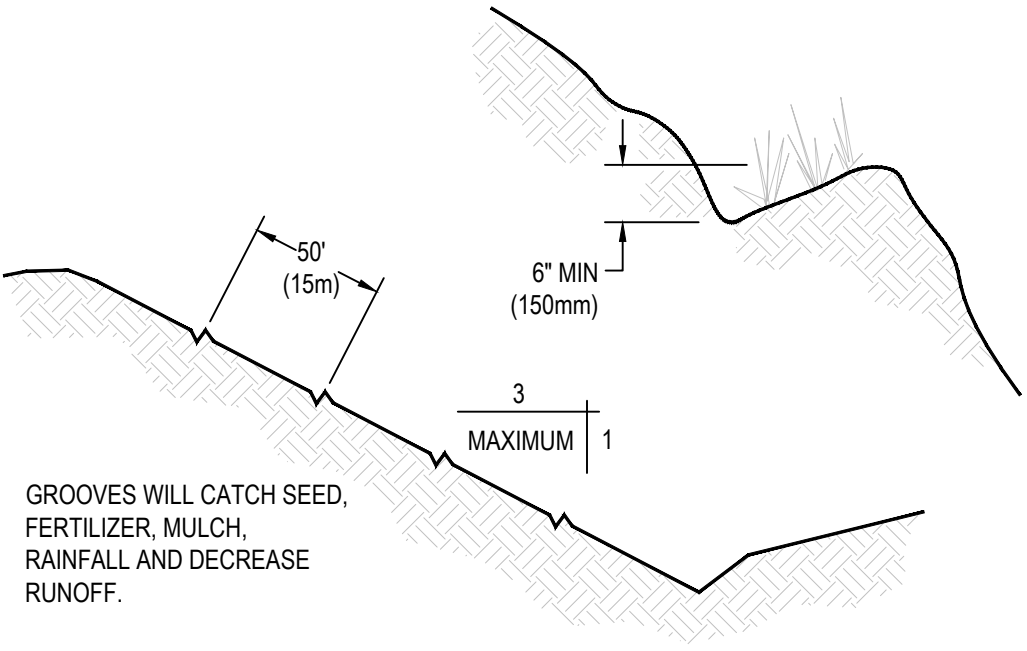
9.5

Prepared By: Scott Taylor
Updated: 7/22/2019 1:06:35 PM
Drawing Status: **APPROVED**
Filename: 9.5.dwg



`TRACKING' WITH MACHINERY UP AND DOWN THE SLOPE PROVIDES GROOVES THAT WILL CATCH SEED, RAINFALL AND REDUCE RUNOFF.

TRACKING



GROOVES WILL CATCH SEED, FERTILIZER, MULCH, RAINFALL AND DECREASE RUNOFF.

CONTOUR FURROWS

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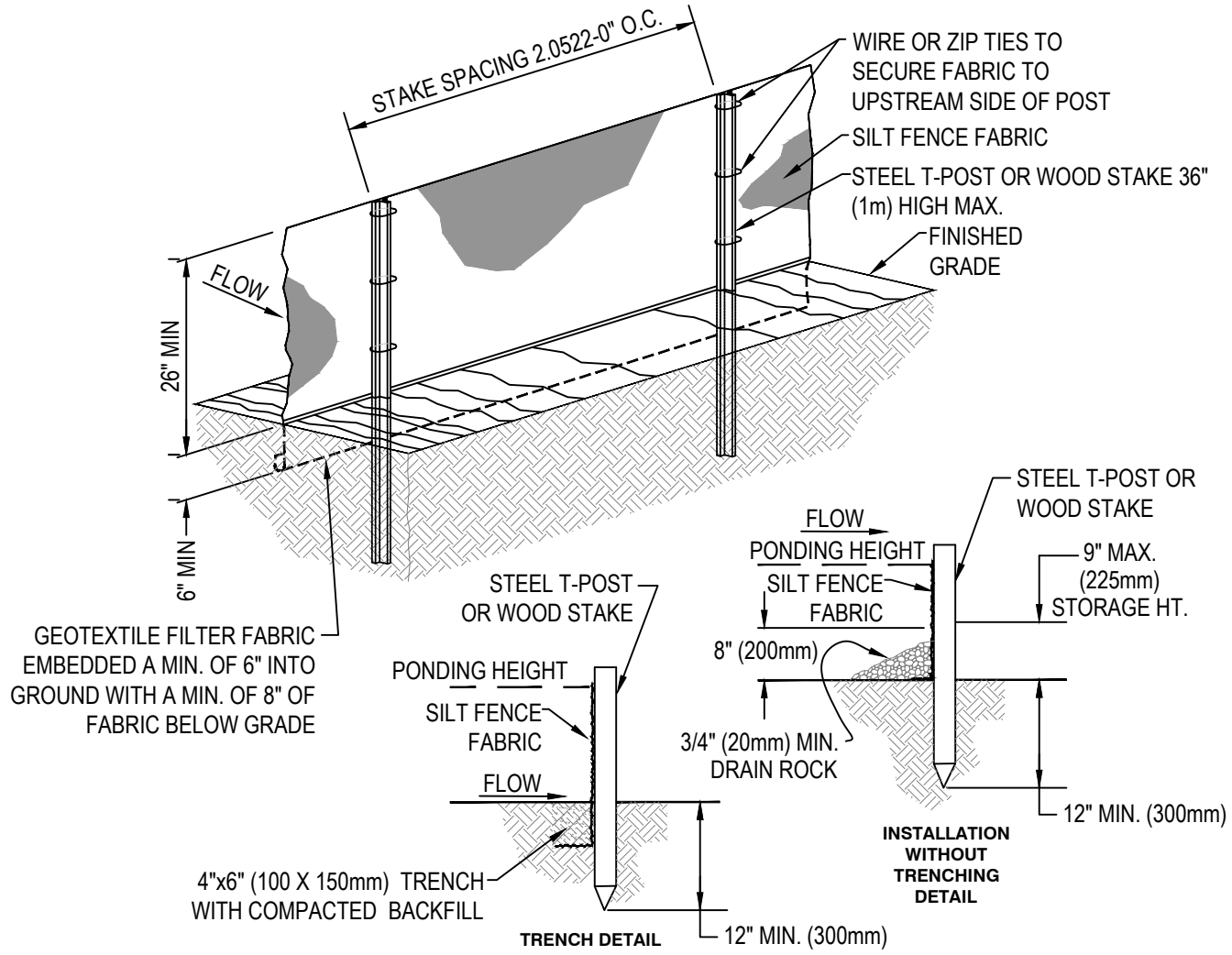
SURFACE ROUGHENING

9.6

Prepared By: Scott Taylor
Updated: 7/22/2019 1:26:10 PM
Drawing Status: **APPROVED**
Filename: 9.6.dwg



1. SILT FENCE SHALL BE CONSTRUCTED BEFORE UPSLOPE GROUND COVER IS REMOVED. CLEARING, GRUBBING, AND STUMPING CAN OCCUR BEFORE SILT FENCE INSTALLATION IF GROUND COVER IS NOT REMOVED.
2. WHERE POSSIBLE, SILT FENCE SHALL BE PLACED ON THE FLATTEST AREA AVAILABLE.
3. A RUN OF SILT FENCE SHOULD FOLLOW THE CONTOUR AS CLOSE AS POSSIBLE WITH THE ENDS TURNED UPSLOPE TO POND WATER BEHIND THE FENCE.
4. THE STAKES SHALL BE PLACED ON THE DOWN SLOPE SIDE OF THE GEOTEXTILE. THE STAKES SHALL BE A MIN. OF 2x2 NOMINAL (1-1/2" x 1-1/2" ACTUAL) HARDWOOD STAKE OF SOUND QUALITY. T-POSTS MAY BE SUBSTITUTED IF GROUND CONDITIONS REQUIRE.
5. WHERE TWO SILT FENCE SECTIONS ARE COMBINED INTO ONE RUN THE END STAKES SHALL BE CONNECTED TOGETHER, NOT SIMPLY OVERLAPPED.
6. IF RUNOFF OVERTOPS THE SILT FENCE, FLOWS AROUND THE ENDS, OR IN ANY OTHER WAY BECOMES A CONCENTRATED FLOW, ONE OF THE FOLLOWING SHALL BE PERFORMED, AS APPROPRIATE: 1) AN ADDITIONAL RUN OF SILT FENCE SHALL BE PLACED UPSTREAM, 2) THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED, 3) ACCUMULATED SEDIMENT SHALL BE REMOVED, OR 4) OTHER PRACTICES SHALL BE IMPLEMENTED.
7. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. MAX. RECOMMENDED STORAGE HEIGHT IS 9" (225mm).
8. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

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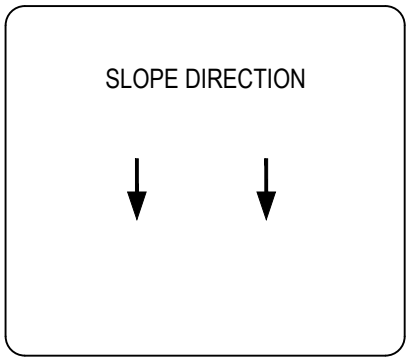
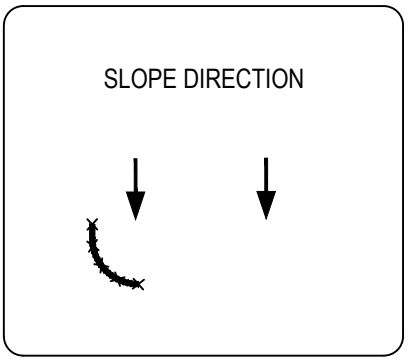
SILT FENCE

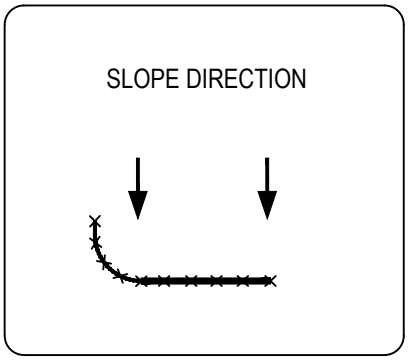
9.7

Prepared By: Scott Taylor
Updated: 7/31/2019 9:42:15 AM
Drawing Status: **APPROVED**
Filename: 9.7.dwg

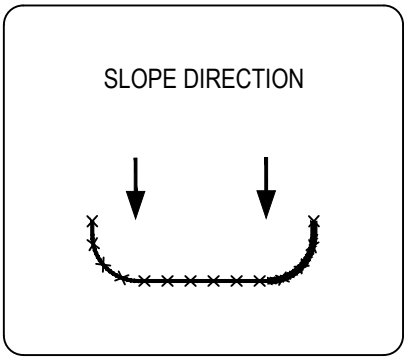




STEP 1
CONSTRUCT LEG



STEP 2
CONSTRUCT DAM



STEP 3
CONSTRUCT LEG 2

INSTALLATION WITH J-HOOKS OR `SMILES' INCREASE SILT FENCE EFFICIENCY.

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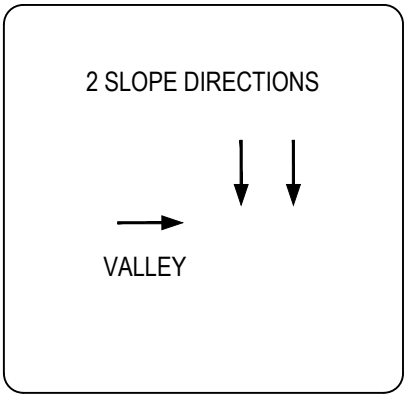
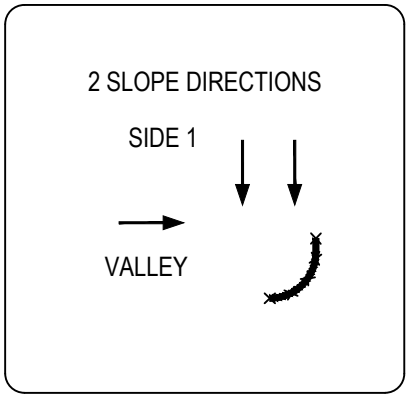
SILT FENCE
TYPICAL PLACEMENT - ONE SLOPE

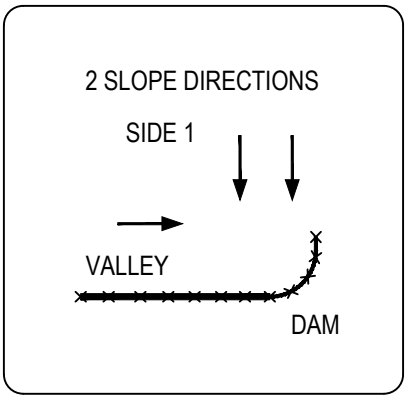
9.8

Prepared By: Scott Taylor
Updated: 7/22/2019 1:26:32 PM
Drawing Status: **APPROVED**
Filename: 9.8.dwg

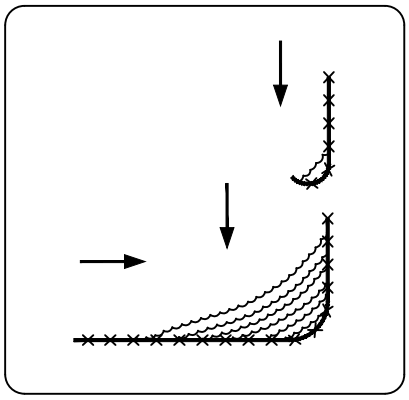




STEP 1
CONSTRUCT A DAM



STEP 2
CONSTRUCT SIDE 2



STEP 3
CONSTRUCT J-HOOKS
AS NEEDED

INSTALLATION WITH J-HOOKS WILL INCREASE SILT FENCE EFFICIENCY AND REDUCE EROSION-CAUSING FAILURES.

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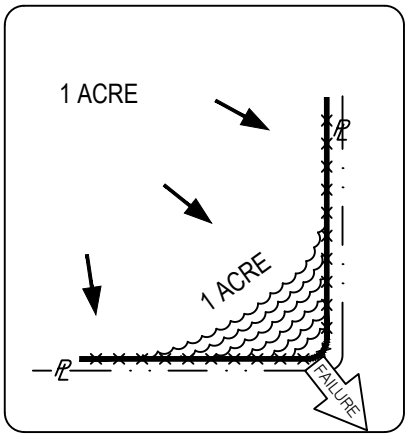
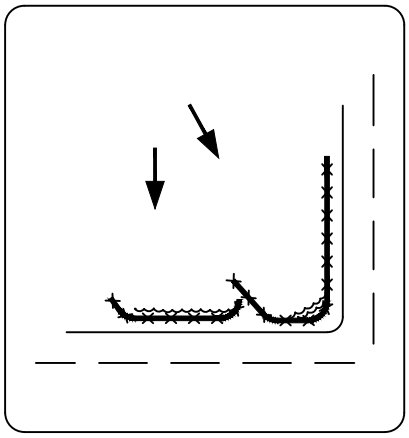
SILT FENCE TYPICAL PLACEMENT - TWO SLOPES

9.9

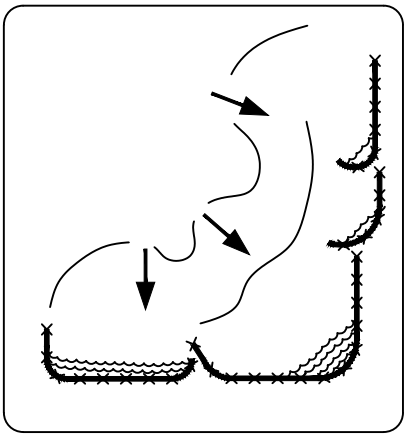
Prepared By: Scott Taylor
Updated: 7/22/2019 1:30:08 PM
Drawing Status: **APPROVED**
Filename: 9.9.dwg

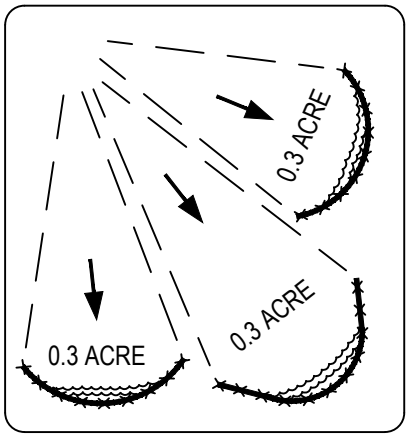


Incorrect - Do Not layout "perimeter control" silt fences along property lines. All sediment laden runoff will concentrate and overwhelm the system.



Correct - Install J-hooks





Discreet segments of silt fence, installed with J-hooks or `smiles' will be much more effective.

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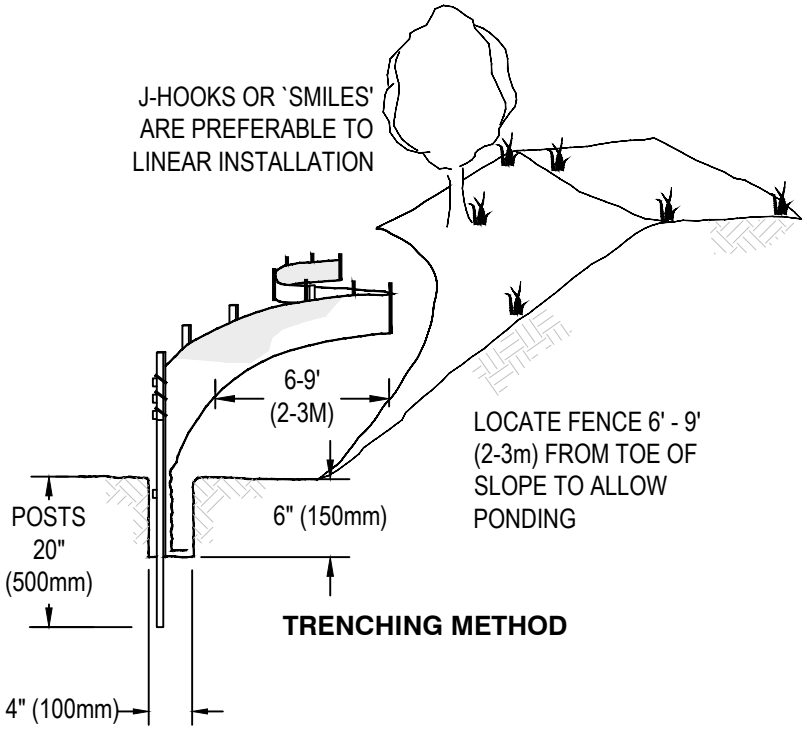
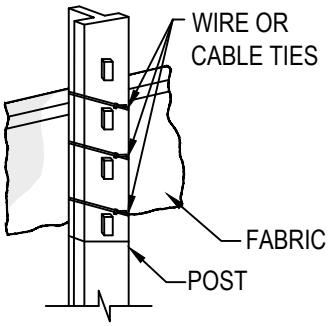
SILT FENCE PLACEMENT FOR PERIMETER CONTROL

9.10

Prepared By: Scott Taylor
Updated: 7/22/2019 1:32:58 PM
Drawing Status: **APPROVED**
Filename: 9.10.dwg

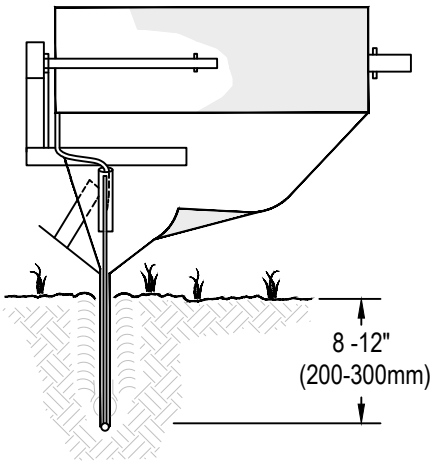


TRENCHING METHOD

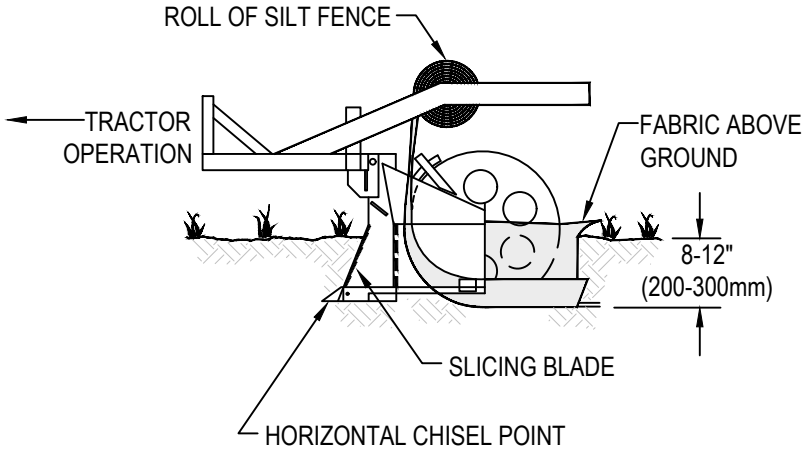


'BEST' T-POST WITH ATTACHMENT TO POST

USE STEEL T-POST IF CANNOT ACHIEVE 500mm DEPTH WITH WOOD POSTS.



'BEST' STATIC SLICING METHOD BACK VIEW



`BEST' STATIC SLICING METHOD SIDE VIEW

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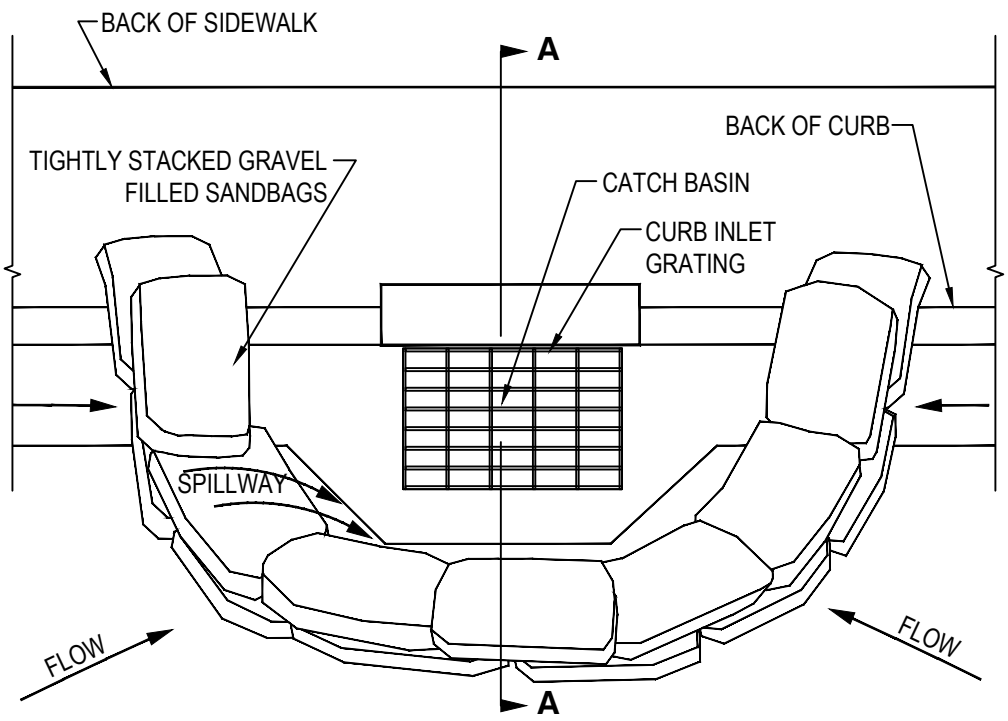
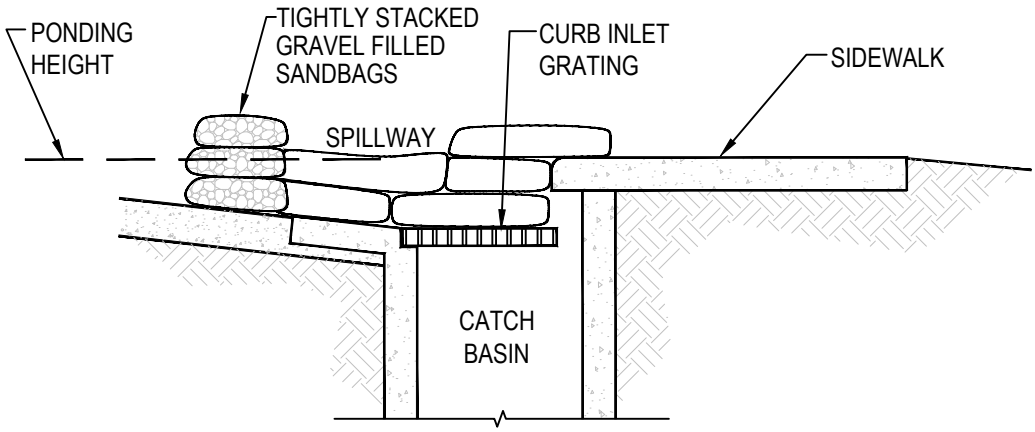
SILT FENCE INSTALLATION

9.11

Prepared By: Scott Taylor
Updated: 7/22/2019 1:39:47 PM
Drawing Status: **APPROVED**
Filename: 9.11.dwg



PLAN VIEW



SECTION A - A

NOTES:

1. PLACE CURB TYPE SEDIMENT BARRIERS ON GENTLY SLOPING STREET SEGMENTS WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. SANDBAGS, OF EITHER BURLAP OR WOVEN GEOTEXTILE FABRIC, ARE FILLED WITH GRAVEL, LAYERED AND PACKED TIGHTLY.
3. LEAVE ONE SANDBAG GAP IN THE TOP ROW TO PROVIDE A SPILLWAY FOR OVERFLOW.
4. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

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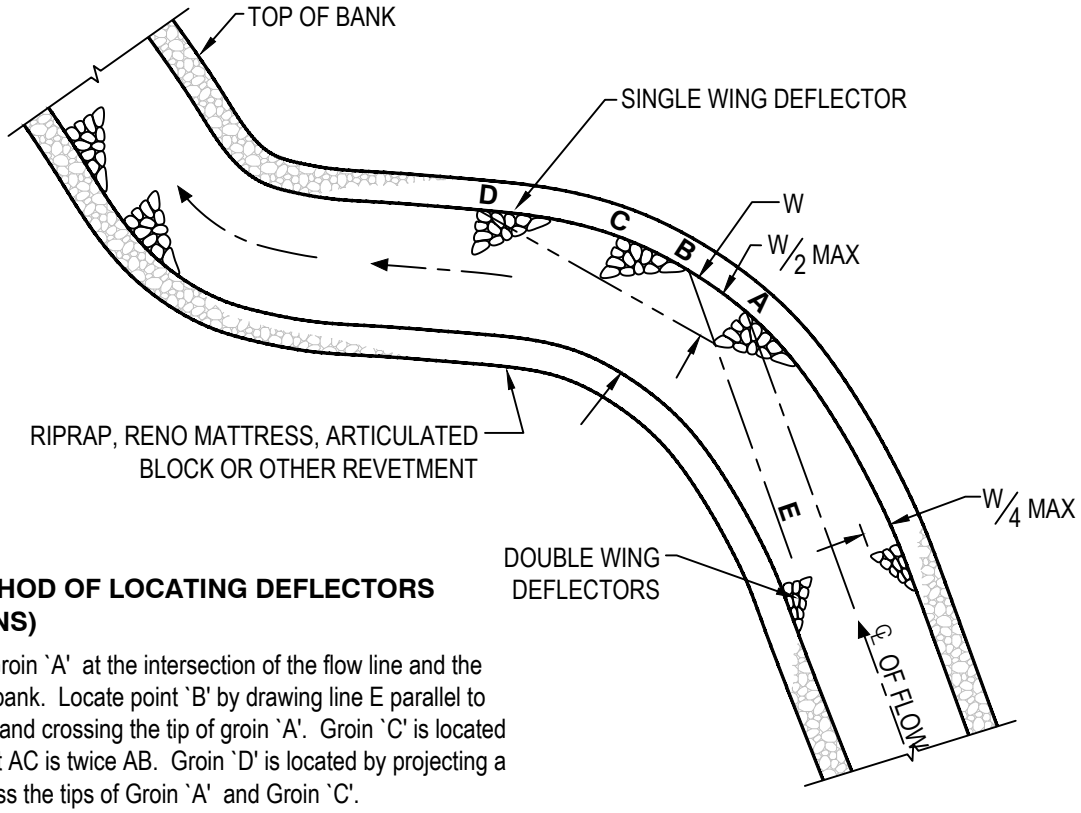
CURB INLET SEDIMENT BARRIER (SAND BAGS)

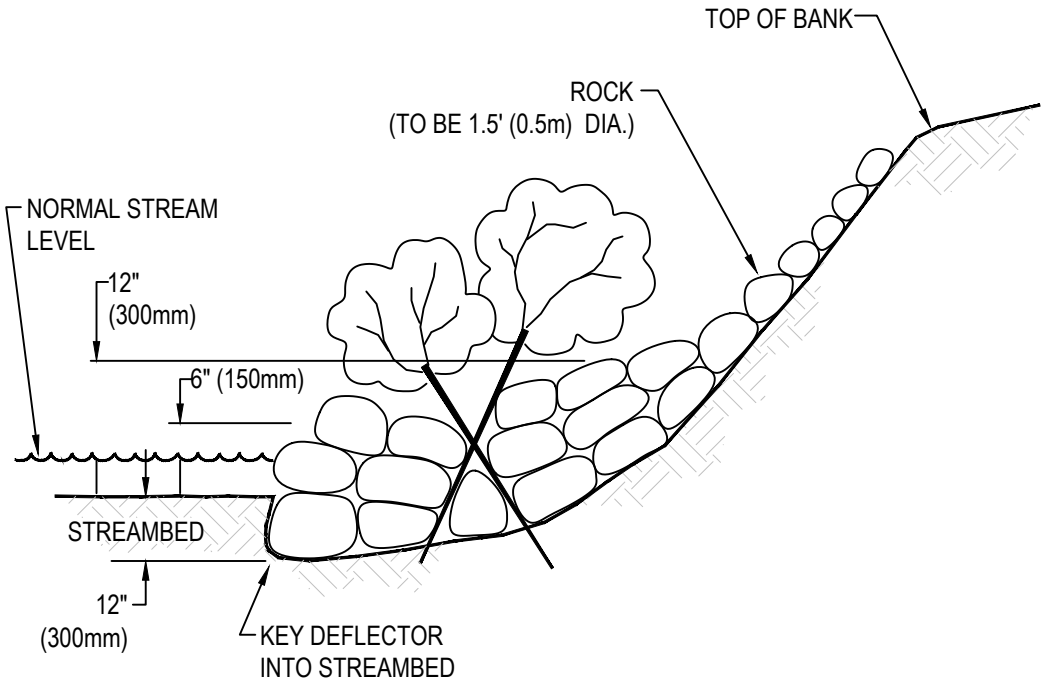
9.12

Prepared By: Scott Taylor
Updated: 7/30/2019 10:27:07 AM
Drawing Status: **APPROVED**
Filename: 9.12.dwg



A METHOD OF LOCATING DEFLECTORS (GROINS)

Locate Groin `A' at the intersection of the flow line and the eroding bank. Locate point `B' by drawing line E parallel to flow line and crossing the tip of groin `A'. Groin `C' is located such that AC is twice AB. Groin `D' is located by projecting a line across the tips of Groin `A' and Groin `C'.



CROSS SECTION

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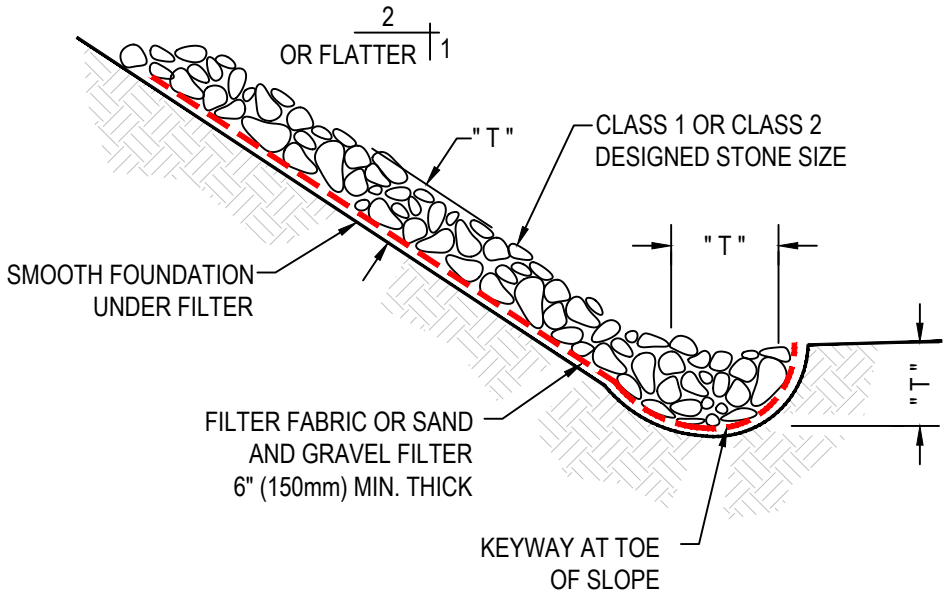
ROCK DEFLECTOR

9.13

Prepared By: Scott Taylor
Updated: 7/22/2019 1:48:11 PM
Drawing Status: **APPROVED**
Filename: 9.13.dwg



TYPICAL SECTION

NOTES:

1. " T " = THICKNESS: THICKNESS SHALL BE DETERMINED BY THE ENGINEER.
2. MIN. THICKNESS SHALL BE 1.5x THE MAX. STONE DIA. *(NEVER LESS THAN 6" (150mm).*

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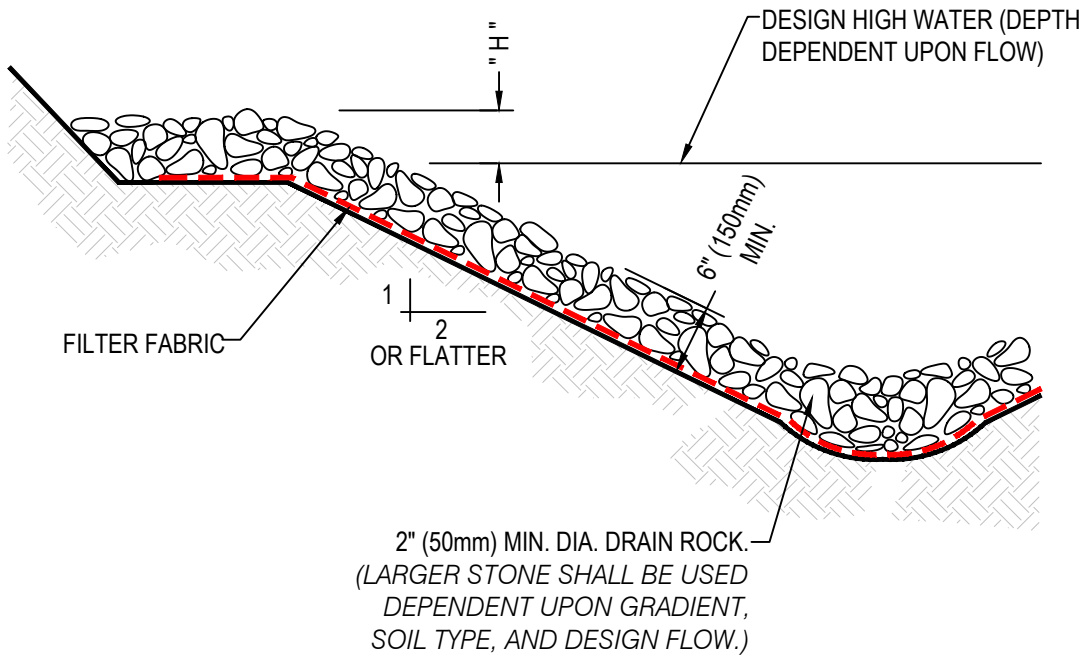
RIPRAP PROTECTION

9.14

Prepared By: Scott Taylor
Updated: 7/22/2019 1:52:41 PM
Drawing Status: **APPROVED**
Filename: 9.14.dwg

DESIGN HEIGHT (" H "), WIDTH AND STONE SIZE SHALL
BE DETERMINED BY THE ENGINEER



TYPICAL SECTION

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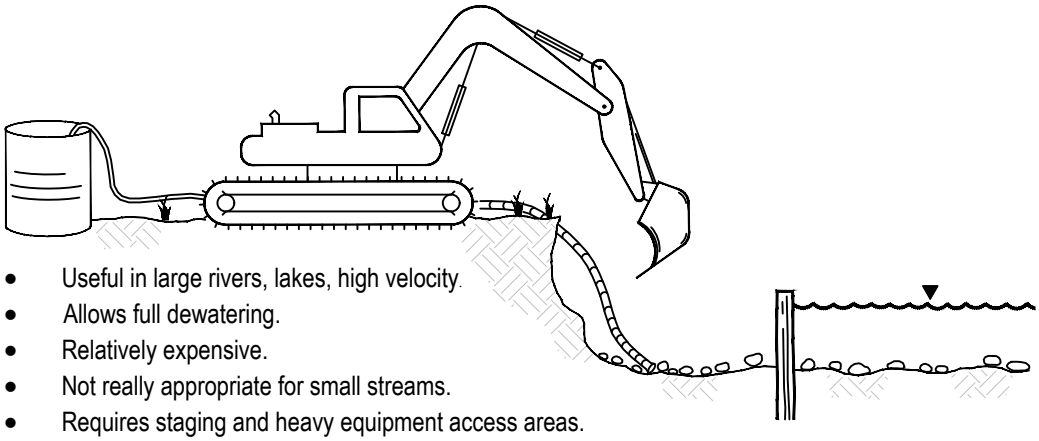
ROCK LINED CHANNEL

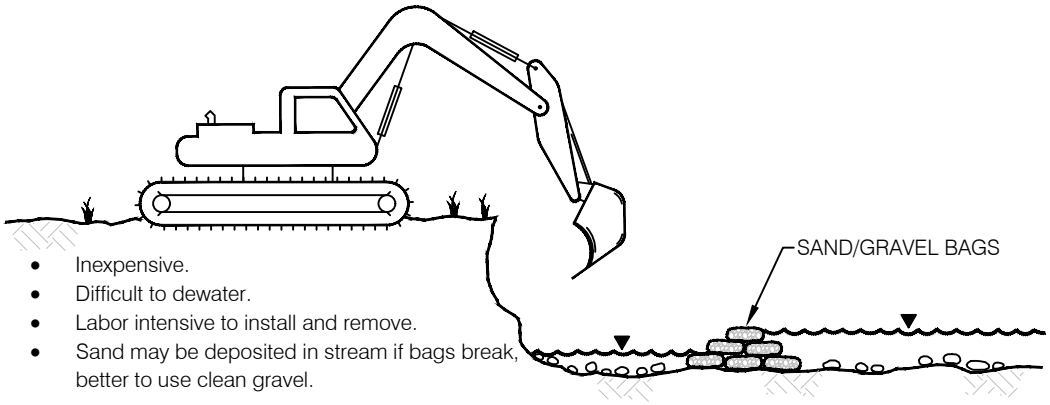
9.15

Prepared By: Scott Taylor
Updated: 7/22/2019 1:55:29 PM
Drawing Status: **APPROVED**
Filename: 9.15.dwg



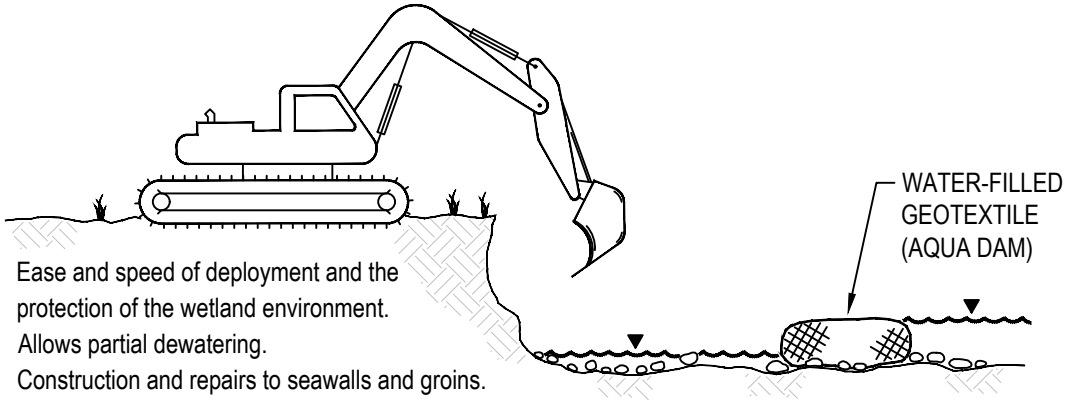
- Useful in large rivers, lakes, high velocity.
- Allows full dewatering.
- Relatively expensive.
- Not really appropriate for small streams.
- Requires staging and heavy equipment access areas.

SHEET PILE ENCLOSURES



- Inexpensive.
- Difficult to dewater.
- Labor intensive to install and remove.
- Sand may be deposited in stream if bags break, better to use clean gravel.

SAND BAG/GRAVEL BAG TECHNIQUE



- Ease and speed of deployment and the protection of the wetland environment.
- Allows partial dewatering.
- Construction and repairs to seawalls and groins.
- Silt containment and sediment collection.
- Can be designed for small streams to large rivers.
- Erosion control through diversion or containment.
- Moderately expensive.

WATER-FILLED GEOTEXTILE (AQUA DAM)

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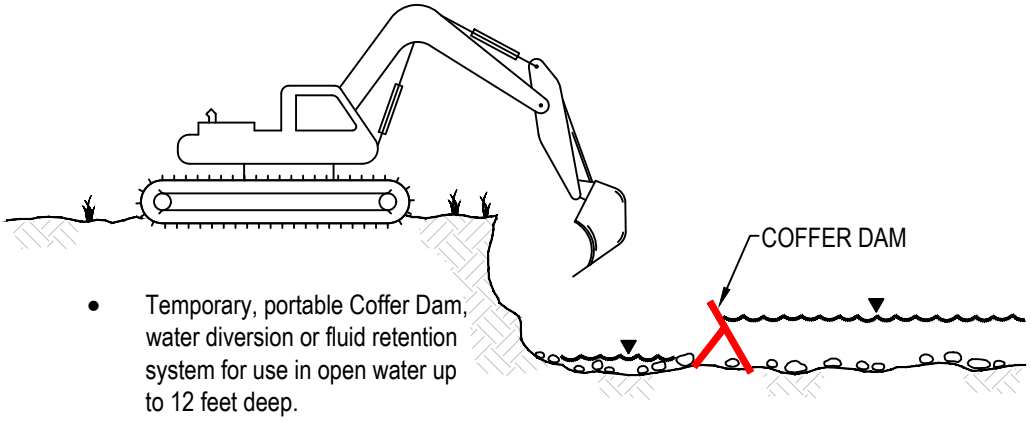
IN-STREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

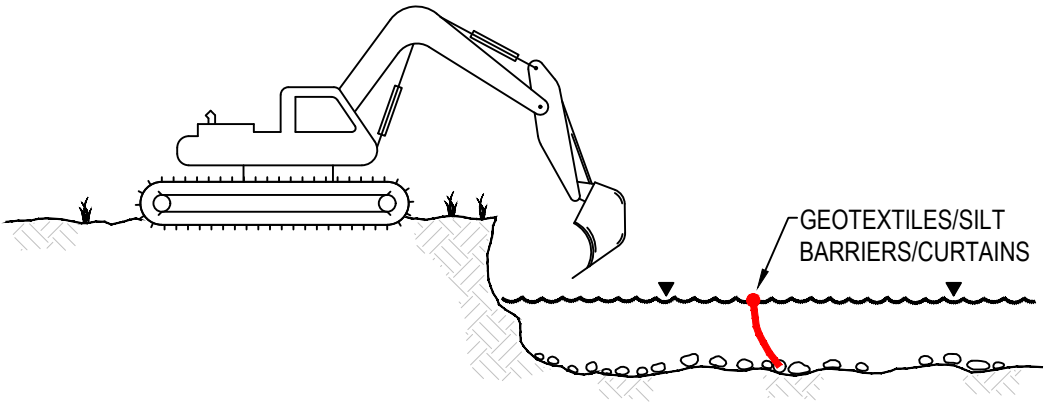
9.16

Prepared By: Scott Taylor
Updated: 7/22/2019 2:26:15 PM
Drawing Status: **APPROVED**
Filename: 9.16.dwg



- Temporary, portable Coffer Dam, water diversion or fluid retention system for use in open water up to 12 feet deep.
- Free standing - many types available.
- Easy installation.
- Allows partial dewatering.
- Can be designed for large and small streams.
- Relatively expensive.

COFFER DAMS



- Used in slow water or lakes only.
- Inexpensive.
- Does not allow dewatering.
- Not very effective especially when removing.

GEOTEXTILES, SILT BARRIERS, CURTAINS

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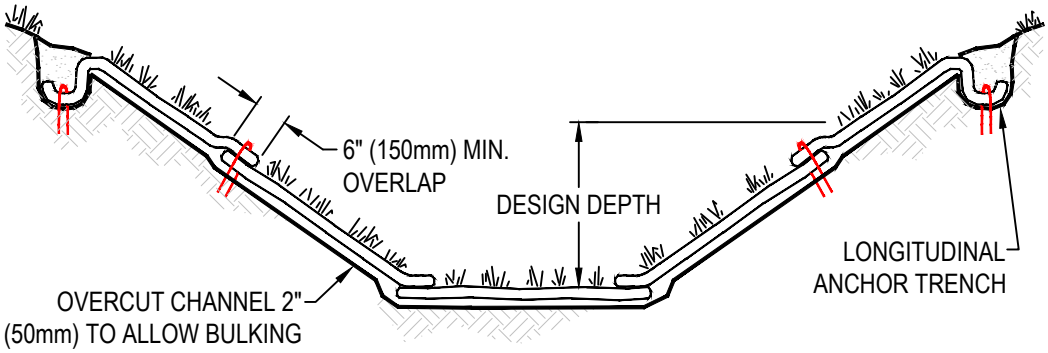
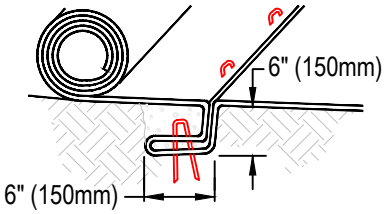
IN-STREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

9.17

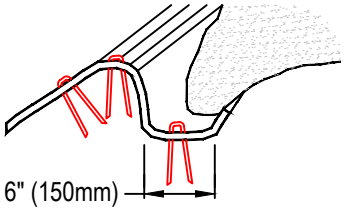
Prepared By: Scott Taylor
Updated: 7/22/2019 2:33:43 PM
Drawing Status: **APPROVED**
Filename: 9.17.dwg



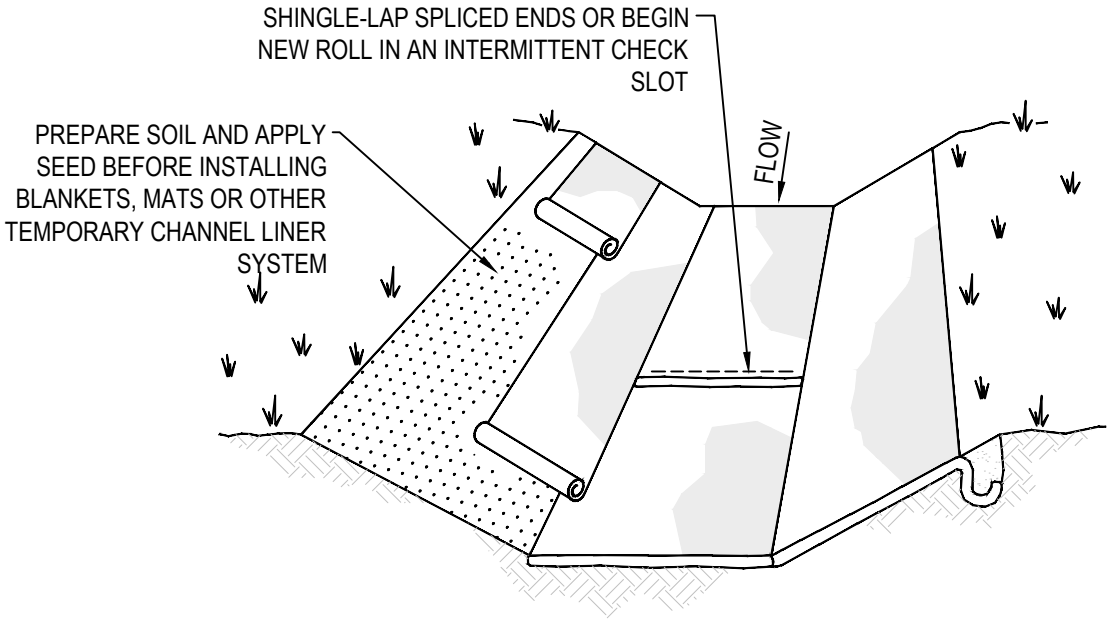


INTERMITTENT CHECK SLOT

TYPICAL INSTALLATION WITH EROSION CONTROL BLANKETS OR TURF REINFORCEMENT MATS



LONGITUDINAL ANCHOR TRENCH



NOTES:

1. DESIGN VELOCITIES EXCEEDING 2-FT/SEC (0.5m/sec) REQUIRE TEMPORARY BLANKETS, MATS OR SIMILAR LINERS TO PROTECT SEED AND SOIL UNTIL VEGETATION BECOMES ESTABLISHED.
2. GRASS-LINED CHANNELS WITH DESIGN VELOCITIES EXCEEDING 6-FT/SEC (2m/sec) SHOULD INCLUDE TURF REINFORCEMENT MATS.

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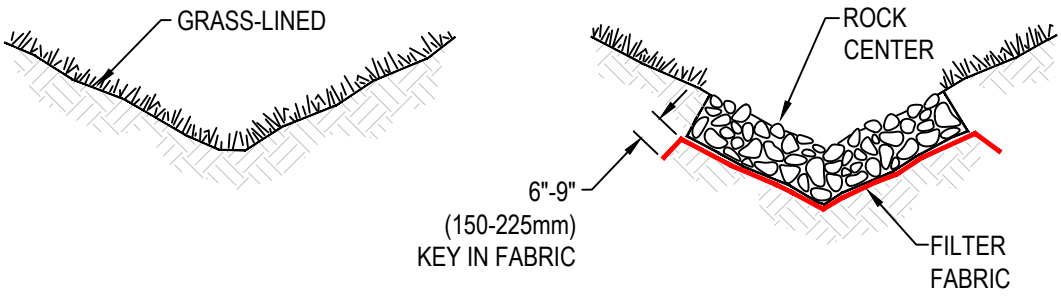
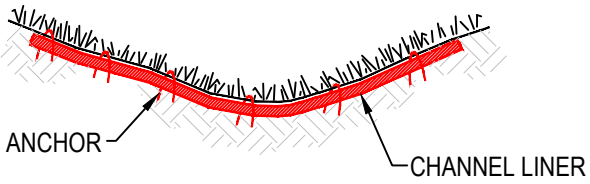
GRASS-LINED CHANNEL TYPICAL INSTALLATION

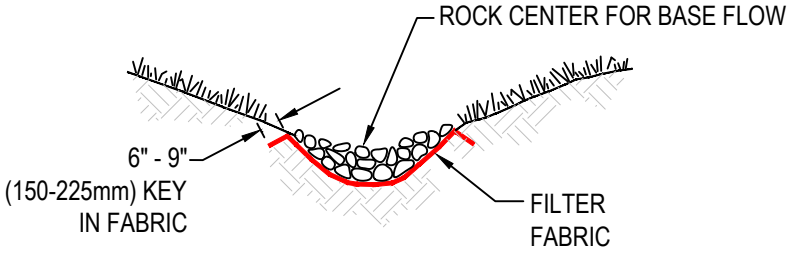
9.18

Prepared By: Scott Taylor
Updated: 7/22/2019 3:07:00 PM
Drawing Status: **APPROVED**
Filename: 9.18.dwg

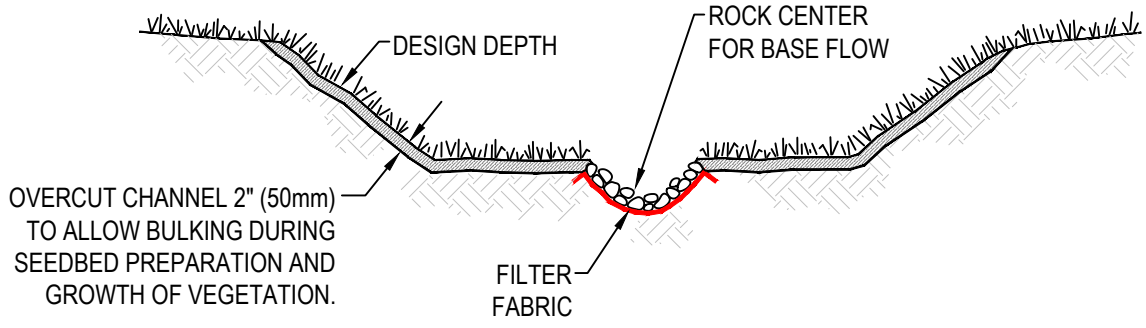


TYPICAL V-SHAPED CHANNEL CROSS-SECTIONS





TYPICAL PARABOLIC CHANNEL CROSS-SECTIONS



TYPICAL TRAPEZOIDAL CHANNEL CROSS-SECTION

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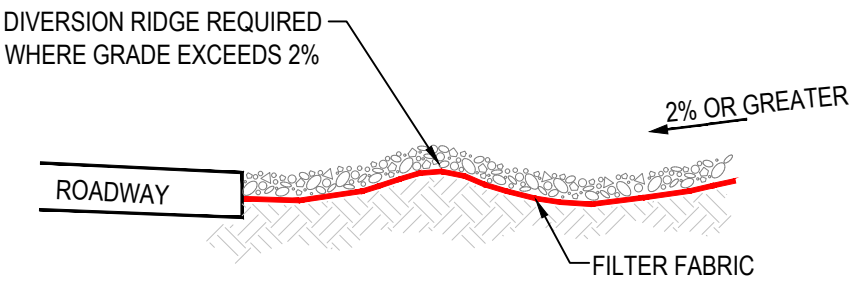
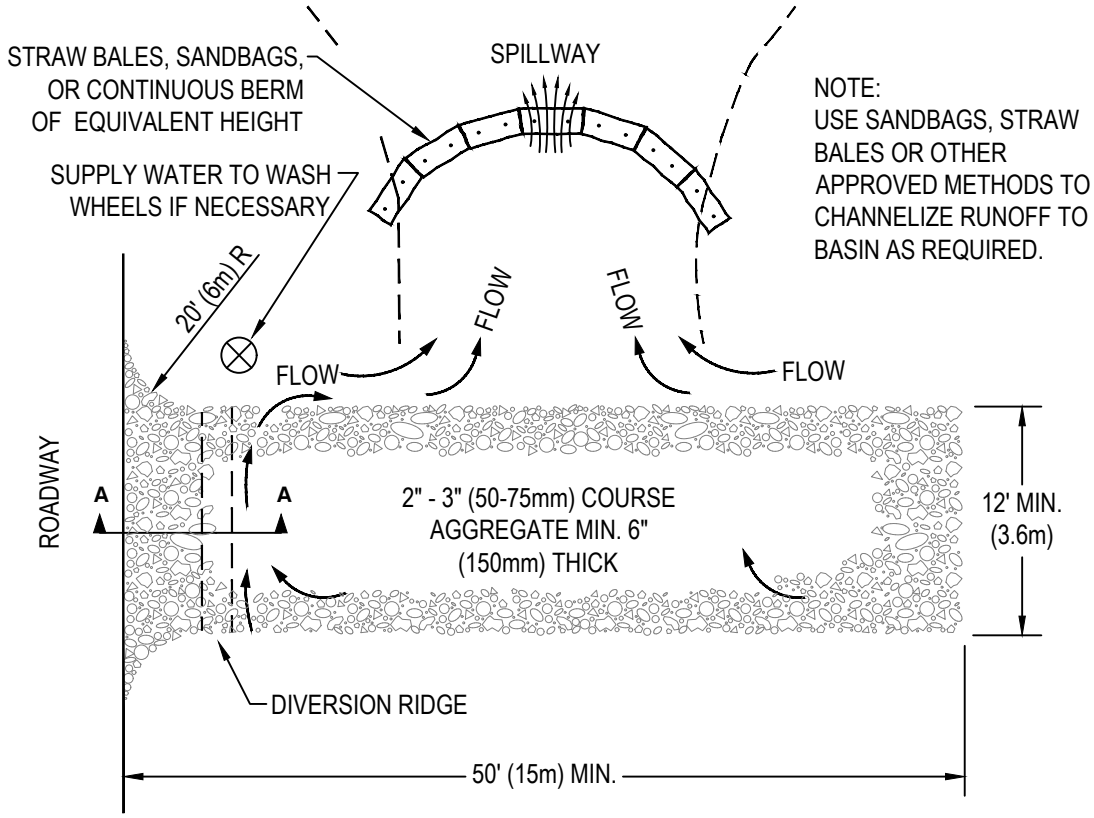
GRASS-LINED CHANNEL TYPICAL CROSS SECTIONS

9.19

Prepared By: Scott Taylor
Updated: 7/22/2019 3:13:23 PM
Drawing Status: **APPROVED**
Filename: 9.19.dwg



SECTION A - A



PLAN

NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

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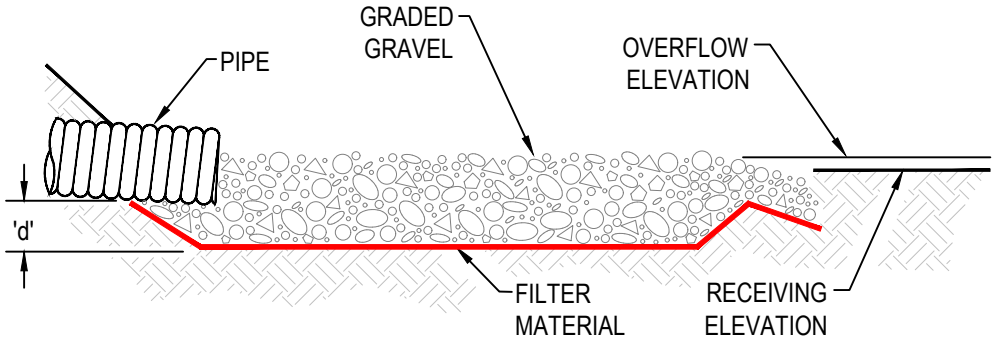
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE / EXIT

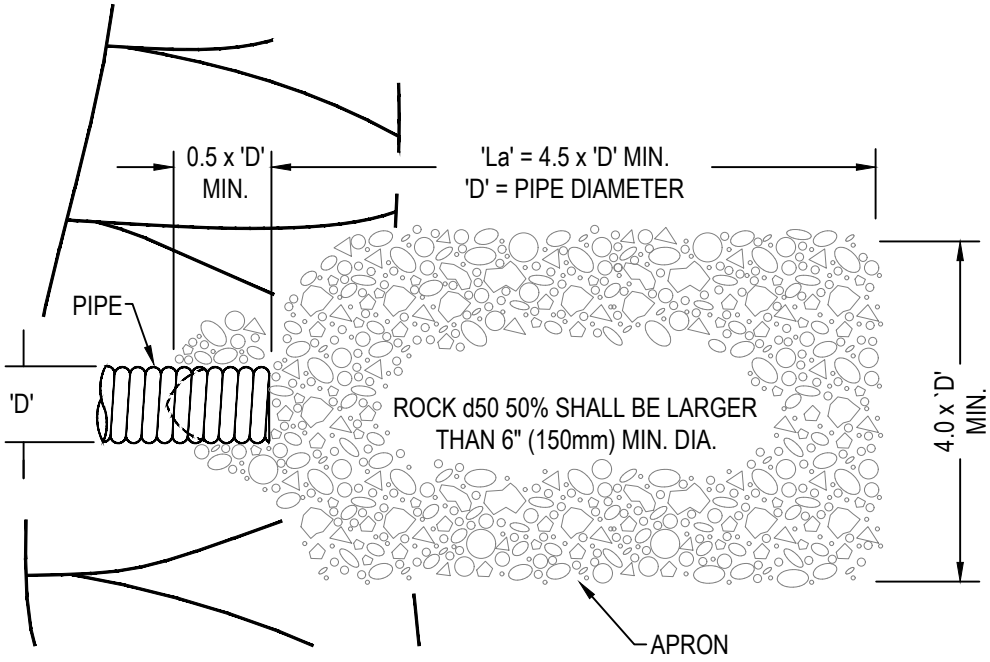
9.20

Prepared By: Scott Taylor
Updated: 8/6/2019 11:09:53 AM
Drawing Status: **APPROVED**
Filename: 9.20.dwg



THICKNESS ('d') = 1.5 x MAX. ROCK DIAMETER - 6" (150mm) MIN.

SECTION



PLAN

NOTES:

1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" (150mm) THICK MIN. GRADED GRAVEL LAYER.

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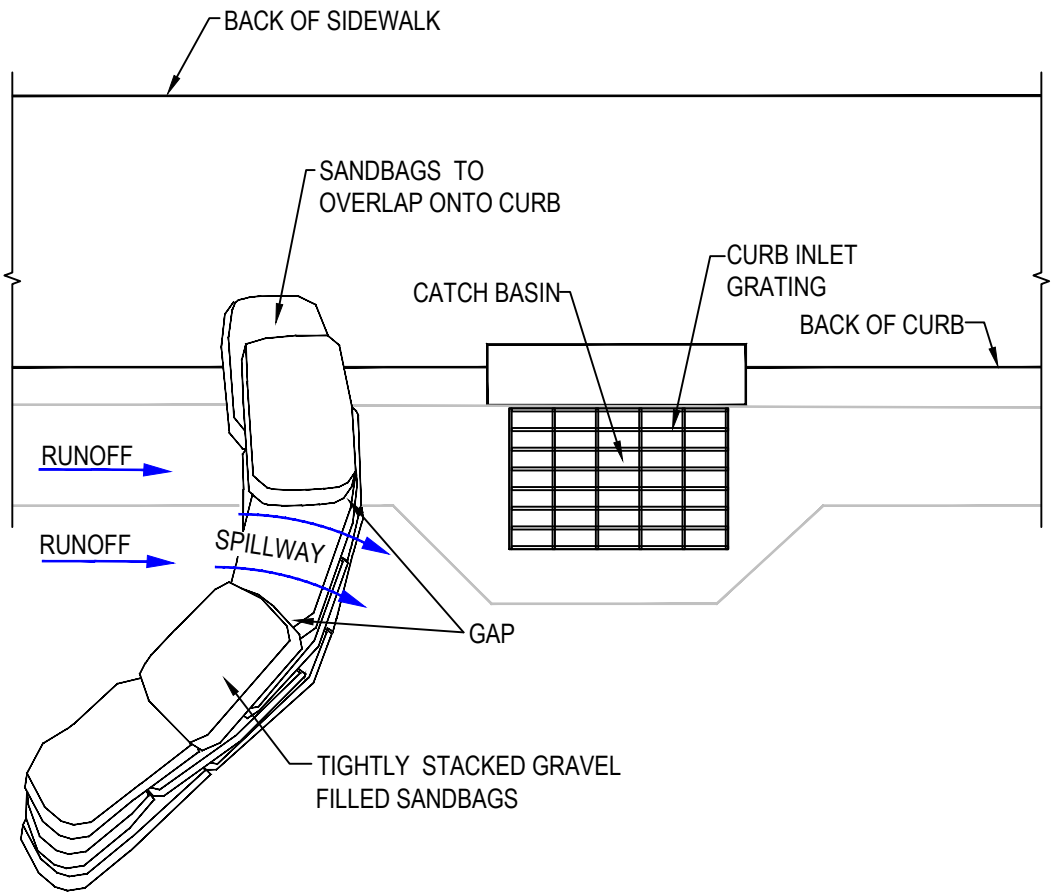
ENERGY DISSIPATOR

9.21

Prepared By: Scott Taylor
Updated: 8/6/2019 11:38:16 AM
Drawing Status: **APPROVED**
Filename: 9.21.dwg



PLAN VIEW

NOTES:

1. PLACE CURB TYPE SEDIMENT BARRIERS ON GENTLY SLOPING STREET SEGMENTS, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. SANDBAGS OF EITHER BURLAP OR WOVEN 'GEOTEXTILE' FABRIC, ARE FILLED WITH GRAVEL, LAYERED AND PACKED TIGHTLY.
3. A GAP EQUIVALENT TO 'ONE SANDBAG' IN THE TOP ROW TO PROVIDE A SPILLWAY FOR OVERFLOW.
4. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

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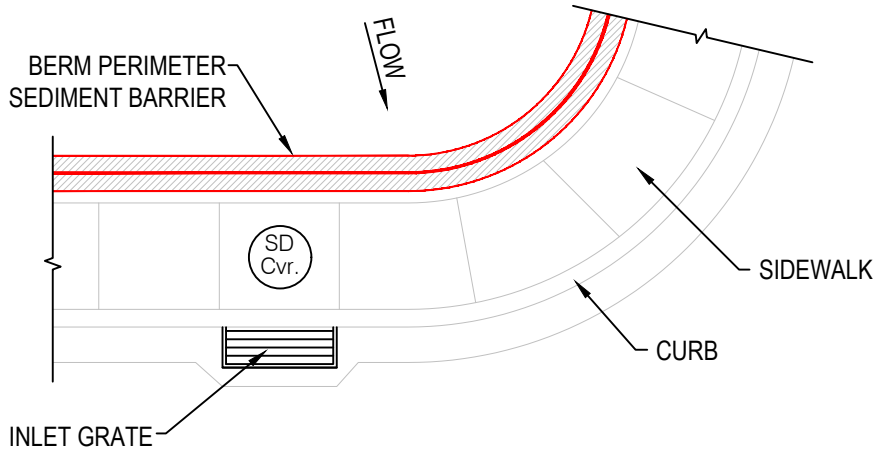
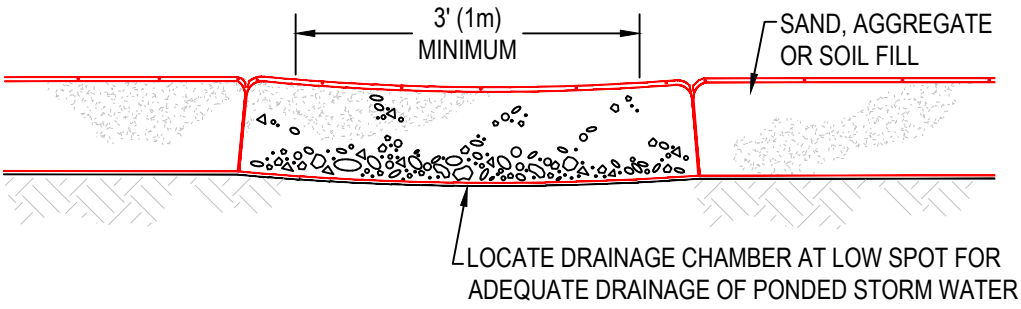
CURB AND GUTTER SEDIMENT BARRIER

9.22

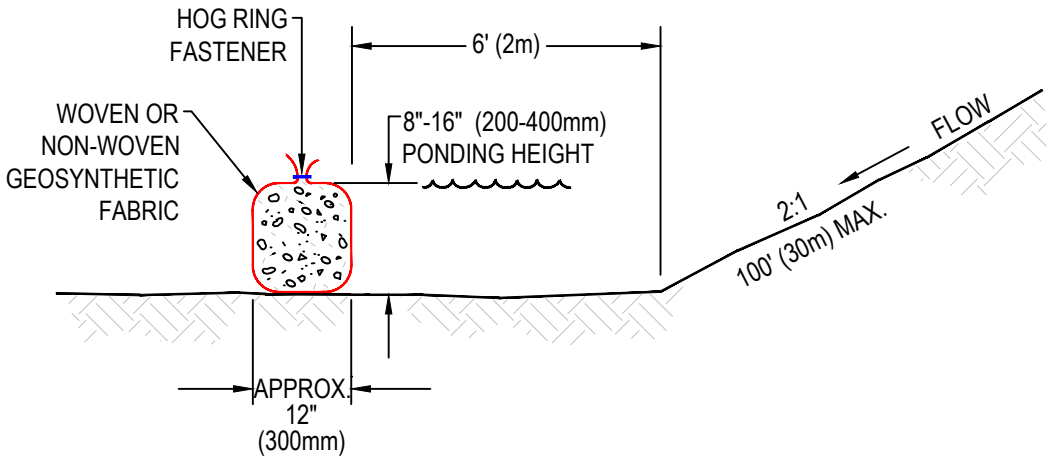
Prepared By: Scott Taylor
Updated: 7/22/2019 3:32:22 PM
Drawing Status: **APPROVED**
Filename: 9.22.dwg



TYPICAL APPLICATION
PERIMETER SEDIMENT BARRIER



FRONT VIEW



SIDE VIEW

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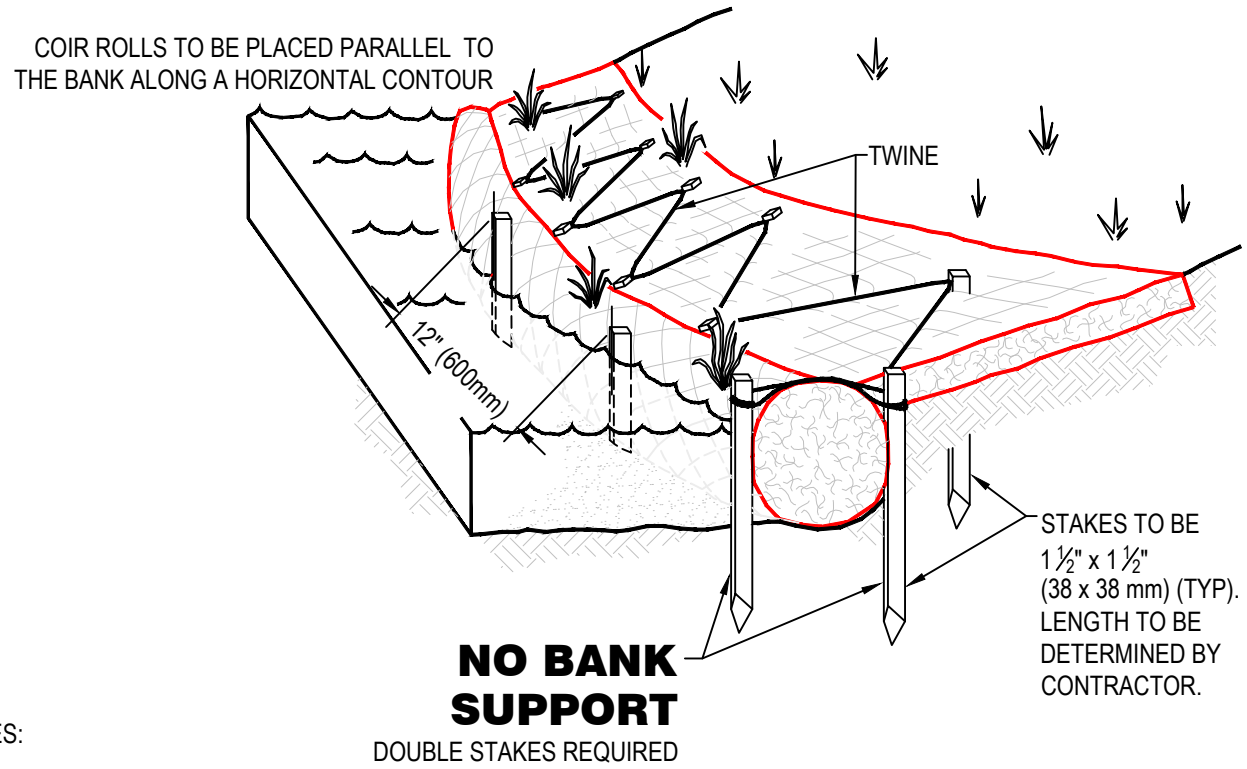
CONTINUOUS BERM

9.23

Prepared By: Scott Taylor
Updated: 7/22/2019 3:41:22 PM
Drawing Status: **APPROVED**
Filename: 9.23.dwg

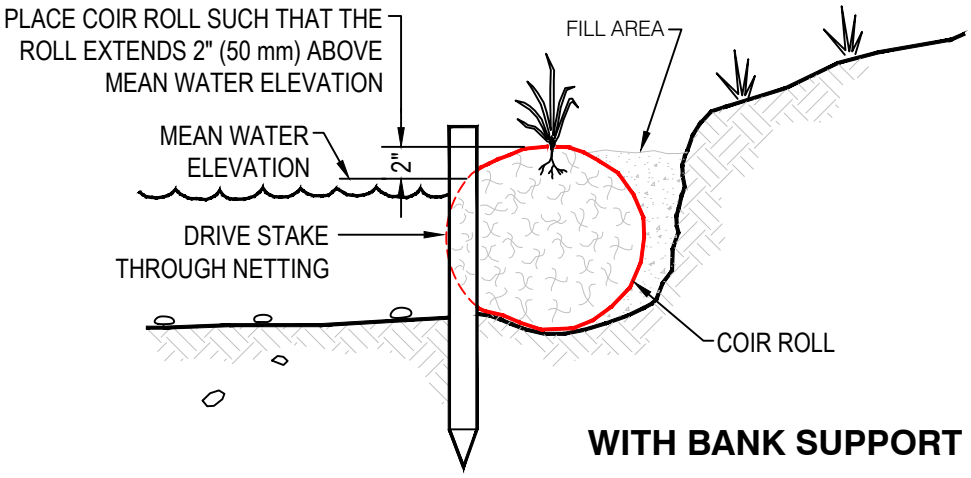


NO BANK SUPPORT

DOUBLE STAKES REQUIRED

NOTES:

1. COIR ROLLS: EASY TO INSTALL; PREPARE SOIL, INCLUDING CLEANING ALL THE WEEDS *(SPRAY A HERBICIDE IF NECESSARY)* AND GRADING. THE SURFACE OF THE SOIL SHOULD BE SMOOTH AND FREE OF ROCKS, ROOTS AND OTHER OBSTRUCTIONS.
2. COIR MATS: ROLL THE MAT ACROSS THE SLOPE; START AT THE TOP OF THE SLOPE BY ANCHORING THE MAT IN A 6" DEEP AND 6" WIDE ANCHOR TRENCH; STAPLE (8" METAL STAPLES OR 12" WOODEN WEDGES ARE RECOMMENDED); BACKFILL AND COMPACT; CUT A WHOLE IN THE MAT WHERE NEED TO PLANT PERENNIAL GROUND COVERS.
3. DRY COIR ROLLS HAVE MORE STRENGTH AND DURABILITY THAN VEGETATED COIR ROLLS; SLOW DEGRADING COIR FIBER LAST LONGER PROVIDING EROSION PROTECTION, THEREBY ALLOWING SUFFICIENT TIME TO ESTABLISH A SUSTAINABLE VEGETATION IN FIELD CONDITIONS.
4. CHOOSE STRONG AND BIODEGRADABLE COIR PRODUCTS FOR SEDIMENT CONTROL AND REDUCE TRASH HAULING AND WASTE DISPOSAL COSTS.



WITH BANK SUPPORT

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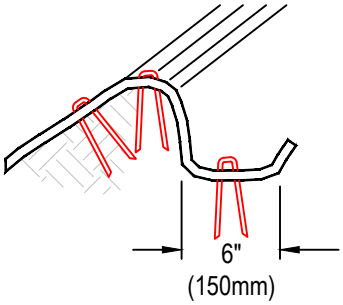
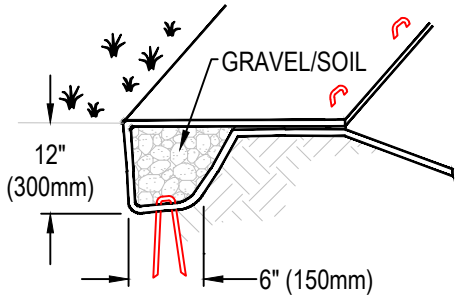
COIR ROLLS / COIR MATS

9.24

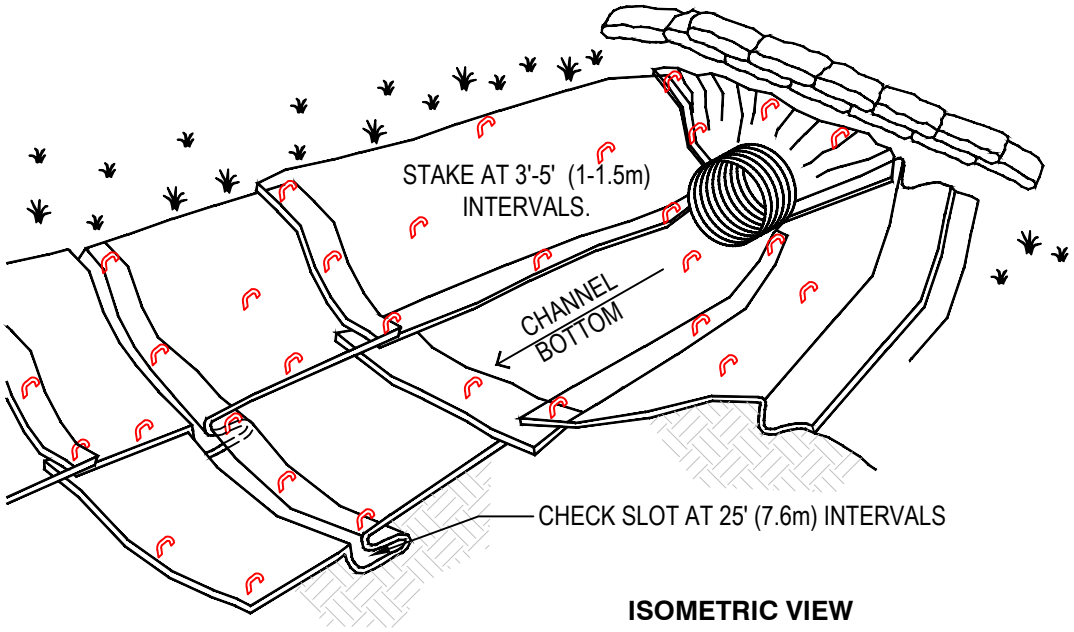
Prepared By: Scott Taylor
Updated: 7/22/2019 4:03:14 PM
Drawing Status: **APPROVED**
Filename: 9.24.dwg



LONGITUDINAL ANCHOR TRENCH



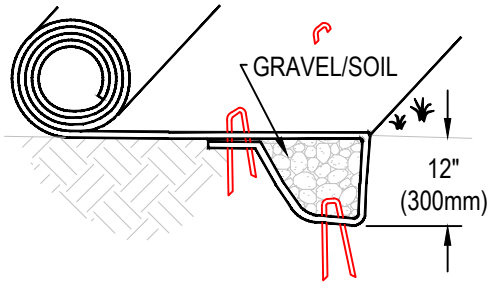
TERMINAL SLOPE & CHANNEL ANCHOR TRENCH



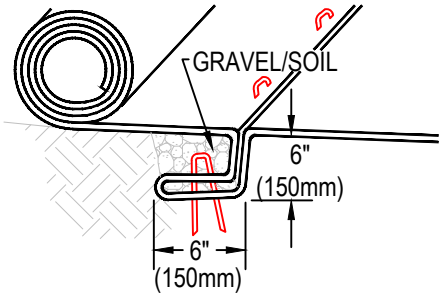
ISOMETRIC VIEW

NOTES:

1. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURERS SPECIFICATIONS.
2. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.



INITIAL CHANNEL ANCHOR TRENCH



INTERMITTENT CHECK SLOT

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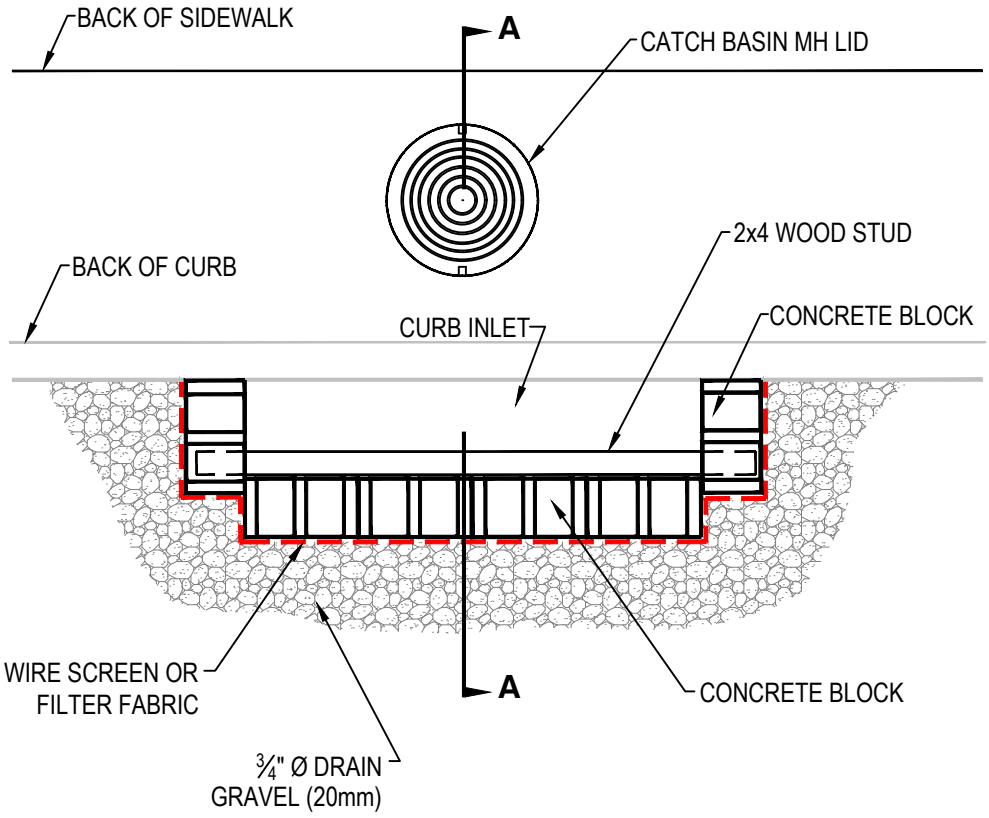
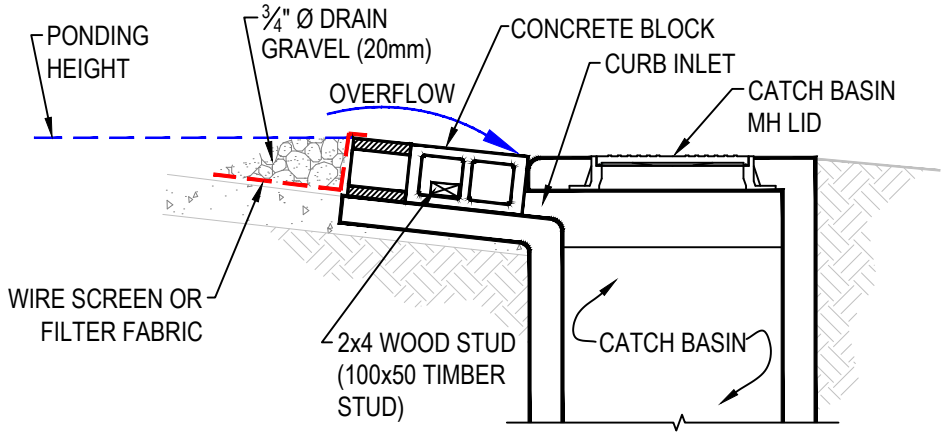
EROSION BLANKETS & TURF REINF. MATS CHANNEL INSTALLATION

9.25

Prepared By: Scott Taylor
Updated: 7/22/2019 3:55:37 PM
Drawing Status: **APPROVED**
Filename: 9.25.dwg



PLAN VIEW



SECTION A - A

NOTES:

1. USE BLOCK AND GRAVEL TYPE SEDIMENT BARRIER WHEN CURB INLET IS LOCATED IN GENTLY SLOPING STREET SEGMENT, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. BARRIER SHALL ALLOW FOR OVERFLOW FROM SEVERE STORM EVENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

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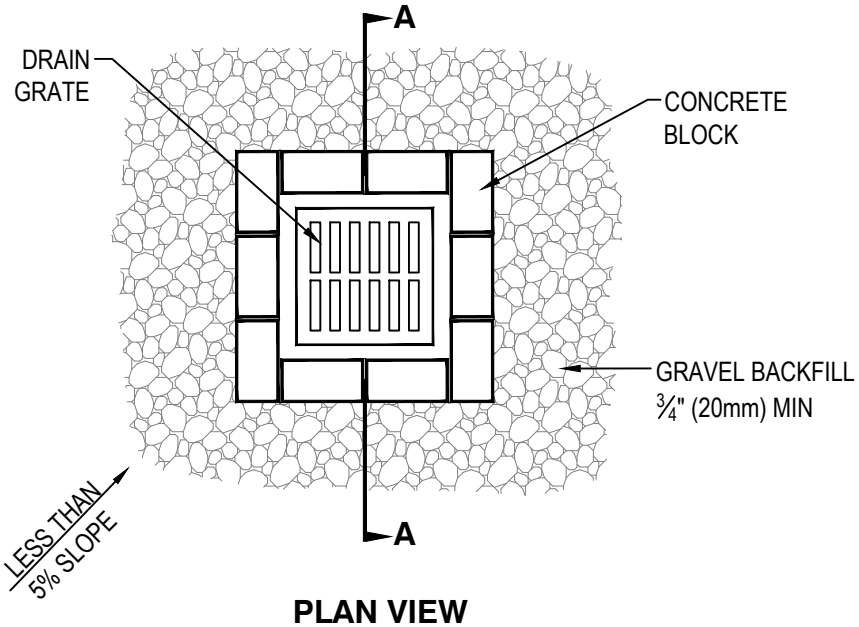
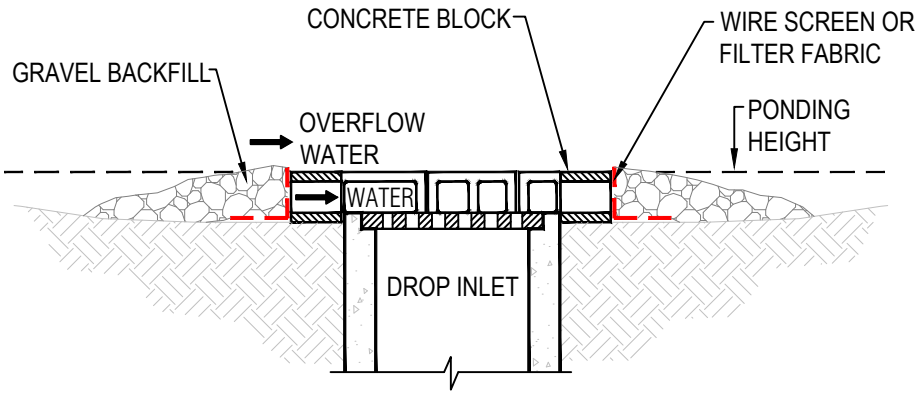
CURB INLET SEDIMENT BARRIER (BLOCK & GRAVEL)

9.26

Prepared By: Scott Taylor
Updated: 8/6/2019 12:07:36 PM
Drawing Status: **APPROVED**
Filename: 9.26.dwg



PLAN VIEW



SECTION A - A

NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

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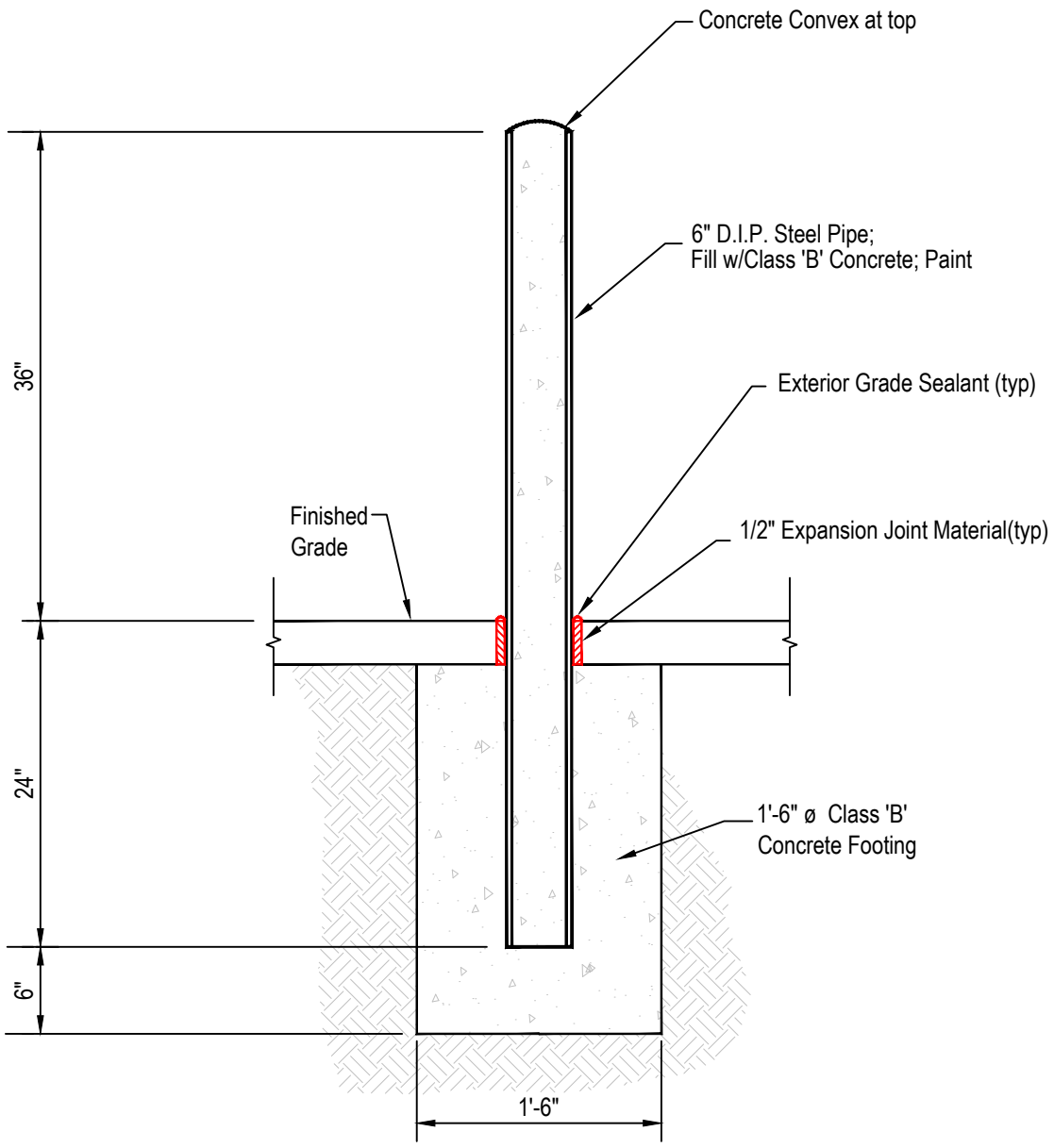
BLOCK AND GRAVEL DROP INLET SEDIMENT BARRIER

9.27

Prepared By: Scott Taylor
Updated: 8/6/2019 12:09:23 PM
Drawing Status: **APPROVED**
Filename: 9.27.dwg



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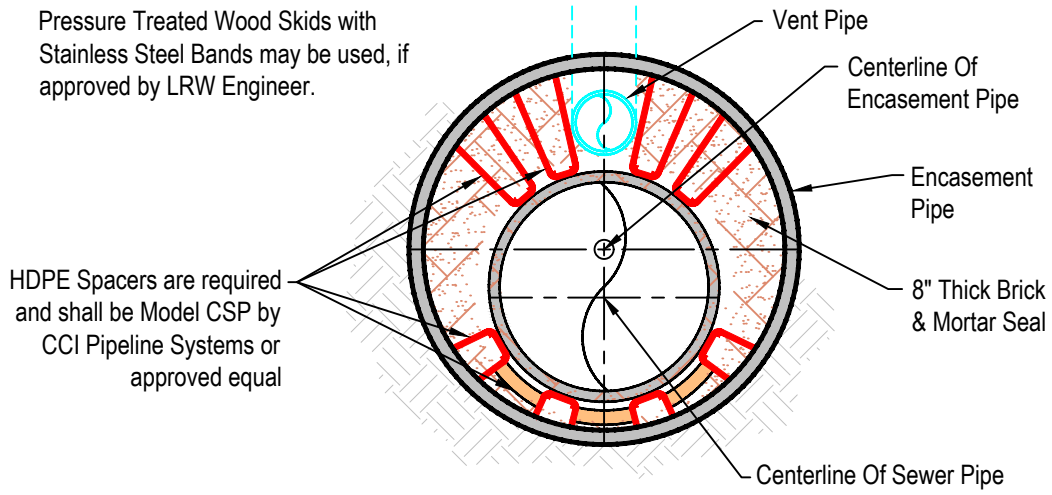
TYPICAL PIPE BOLLARD DETAIL

10.0

Prepared By: Scott Taylor
Updated: 7/31/2019 9:59:49 AM
Drawing Status: **APPROVED**
Filename: 10.0.dwg



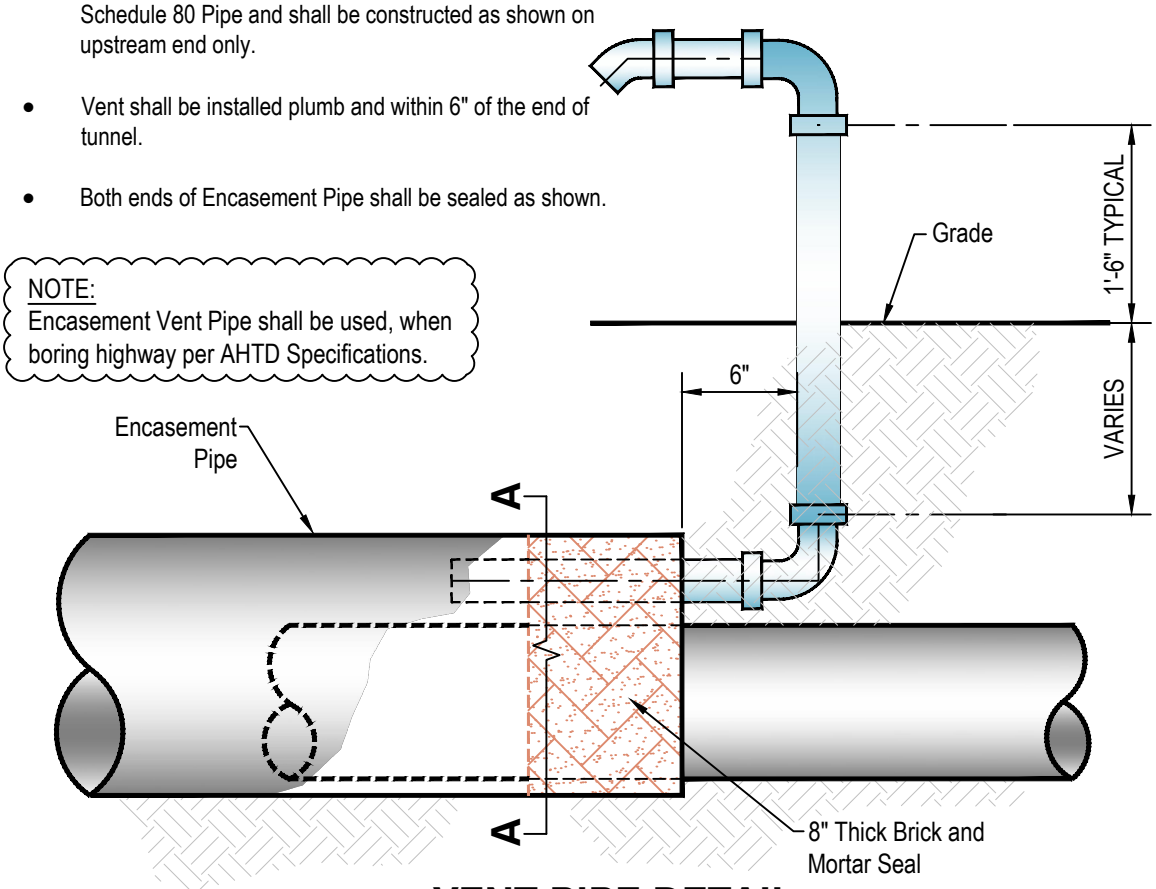
SECTION A-A

(Enlarged to show detail)

Encasement Vent Pipe notes:

- Encasement Pipe Vents shall be made of 2" galv. or Schedule 80 Pipe and shall be constructed as shown on upstream end only.
- Vent shall be installed plumb and within 6" of the end of tunnel.
- Both ends of Encasement Pipe shall be sealed as shown.

NOTE:
Encasement Vent Pipe shall be used, when boring highway per AHTD Specifications.



VENT PIPE DETAIL

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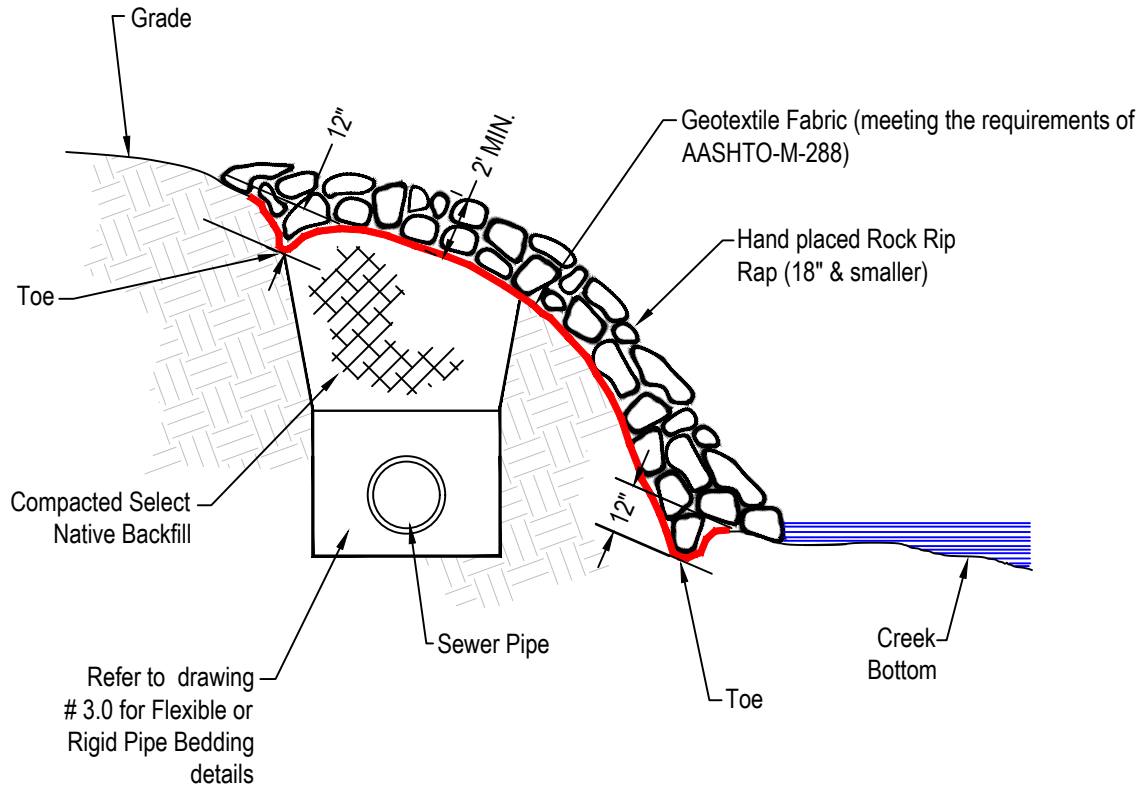
ENCASEMENT PIPE DETAILS

10.1

Prepared By: Scott Taylor
Updated: 7/16/2019 1:07:08 PM
Drawing Status: **APPROVED**
Filename: 10.1.dwg



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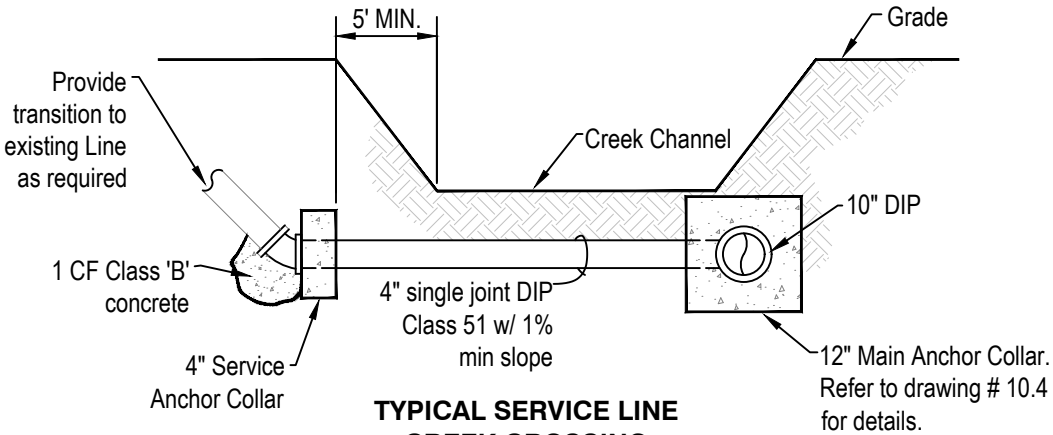
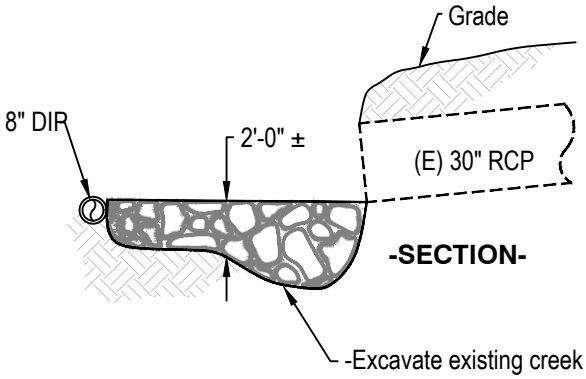
STANDARD RIPRAP DETAIL

10.2

Prepared By: Scott Taylor
Updated: 7/31/2019 9:39:58 AM
Drawing Status: **APPROVED**
Filename: 10.2.dwg

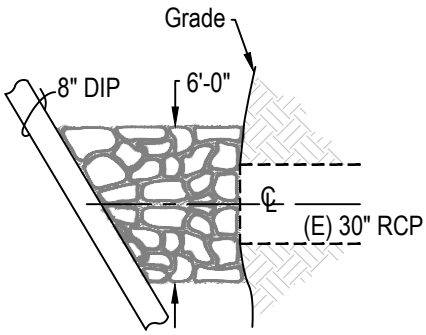


TYPICAL SERVICE LINE CREEK CROSSING



-SECTION-

-Excavate existing creek channel
-Backfill with Rip Rap
-Pour Concrete over Rip Rap
-Smooth Concrete to provide transition to creek flowline



-PLAN VIEW-

NOTE-

- 4" Service Line Reinstatements crossing an existing creek channel shall be constructed using 4" Ductile Iron Pipe (DIP).
- 4" Anchor Collar installed on the 4" service & a 12" Anchor Collar constructed around the tap or wye connection on the new main as shown in the above detail.

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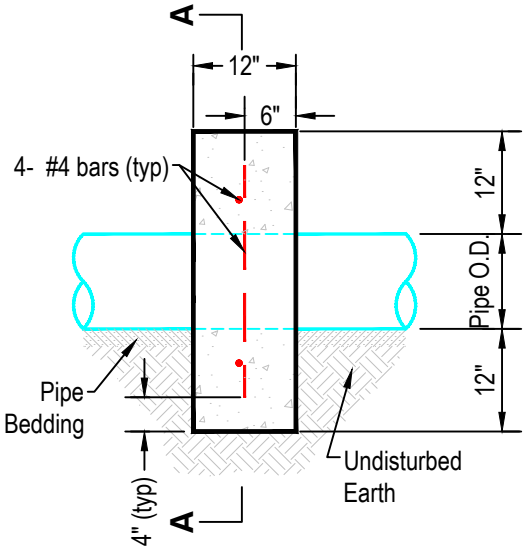
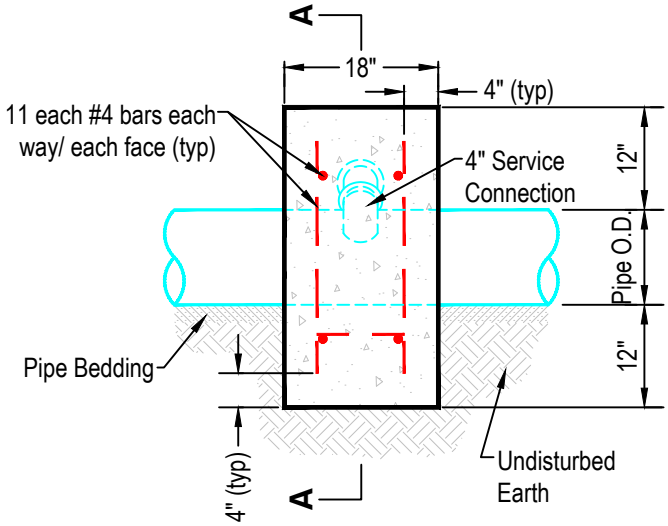
STANDARD SPLASH PAD DETAILS

10.3

Prepared By: Scott Taylor
Updated: 8/6/2019 12:38:26 PM
Drawing Status: **APPROVED**
Filename: 10.3.dwg

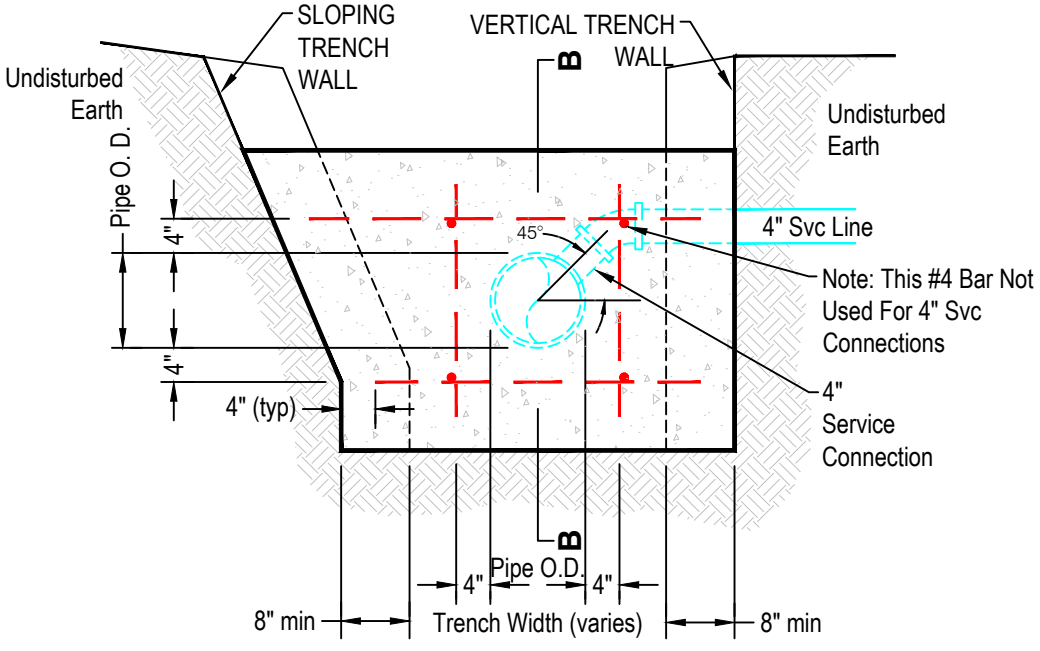


STANDARD SECTION 'B-B'



MODIFIED SECTION 'B-B' FOR 4" SERVICE CONNECTION

ANCHOR COLLAR TABLE	
SLOPE (%)	ANCHOR COLLAR SPACING
< 20	N/A
20 - 35	36 FEET CENTER TO CENTER
35 - 50	24 FEET CENTER TO CENTER
> 50	16 FEET CENTER TO CENTER



SECTION 'A-A'

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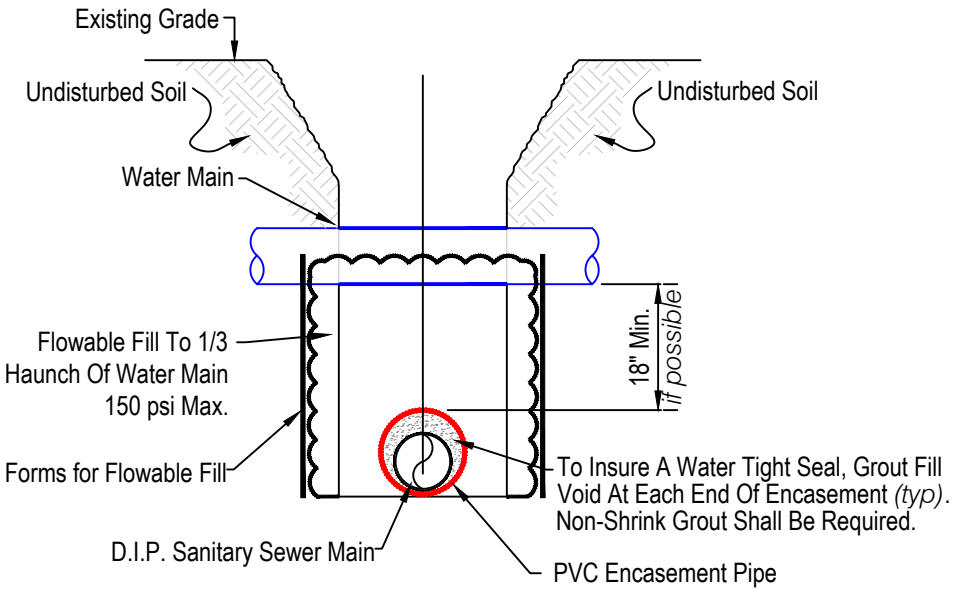
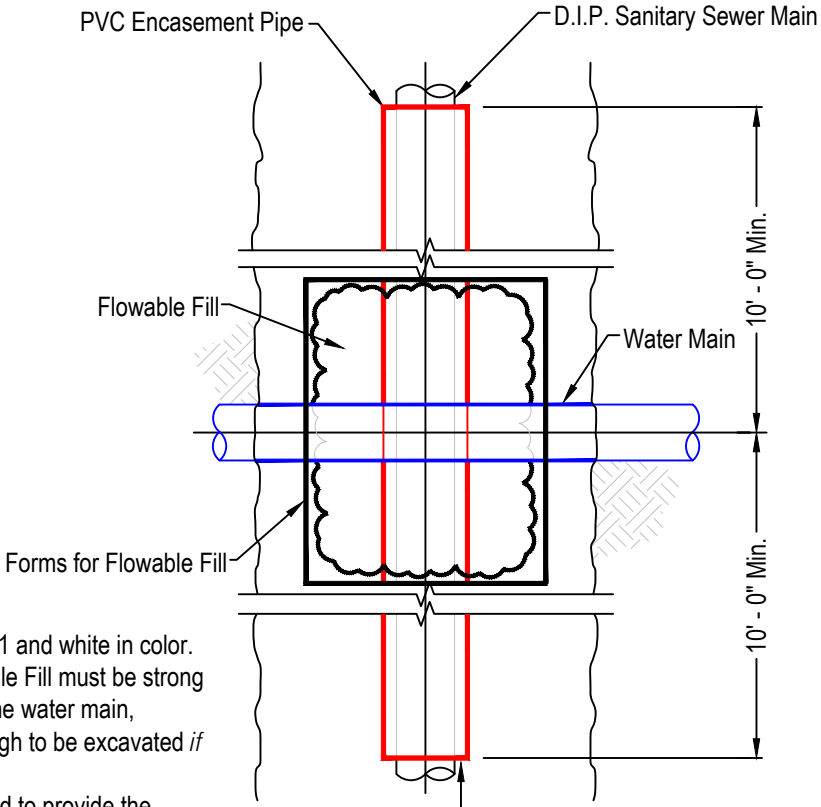
ANCHOR COLLAR DETAILS AND TABLE

10.4

Prepared By: Scott Taylor
Updated: 7/16/2019 1:07:32 PM
Drawing Status: **APPROVED**
Filename: 10.4.dwg





1. PVC shall be SDR 21 and white in color.
2. Cradle fill for Flowable Fill must be strong enough to support the water main, however infirm enough to be excavated *if necessary*.
3. Contractor is required to provide the necessary forms to maintain a uniform wall for the Flowable Fill.

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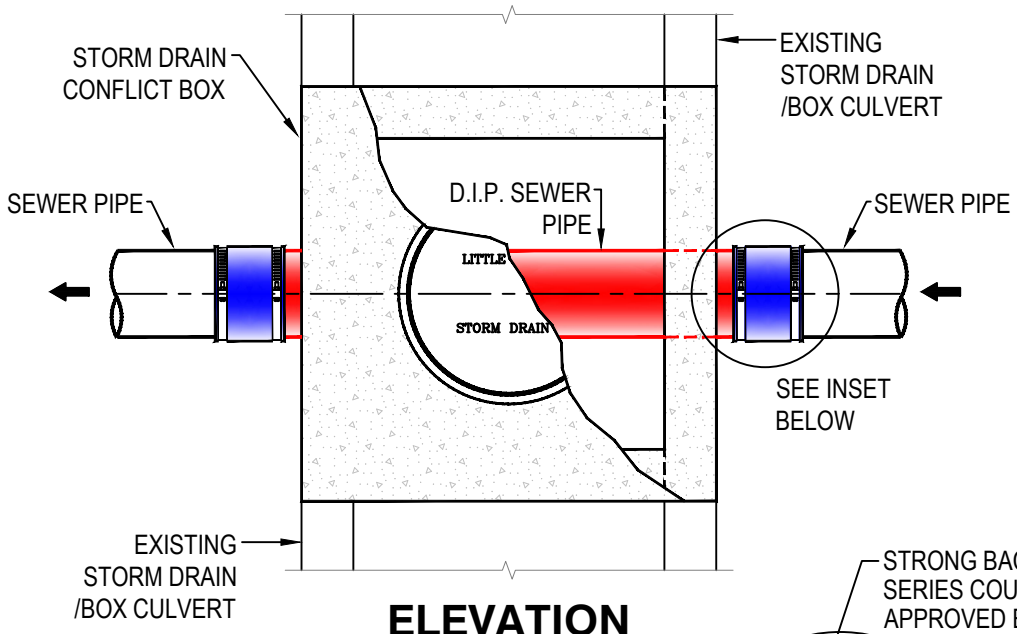
SEWER AND WATER MAINS CROSSING DETAILS

10.5

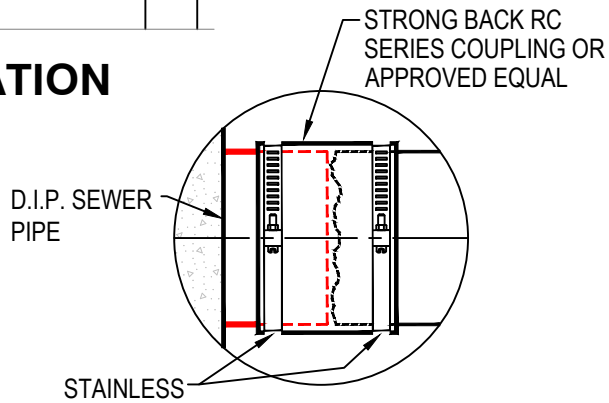
Prepared By: Scott Taylor
Updated: 8/6/2019 12:40:26 PM
Drawing Status: **APPROVED**
Filename: 10.5.dwg



ELEVATION

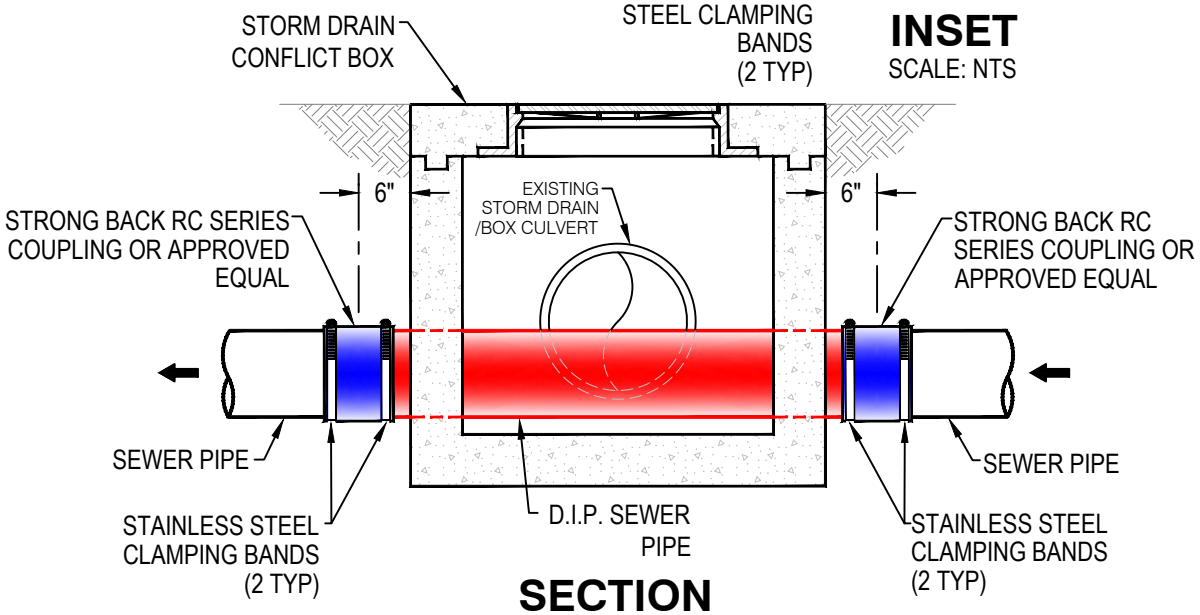
NOTES:

1. CONTRACTOR SHALL FORM AND POUR A NEW TOP W/ RING AND LID ON EXISTING BOX CULVERTS.
2. A CONFLICT BOX *(JUNCTION BOX)* W/ RING AND LID SHALL BE CONSTRUCTED ON EXISTING STORM PIPE.



INSET

SCALE: NTS



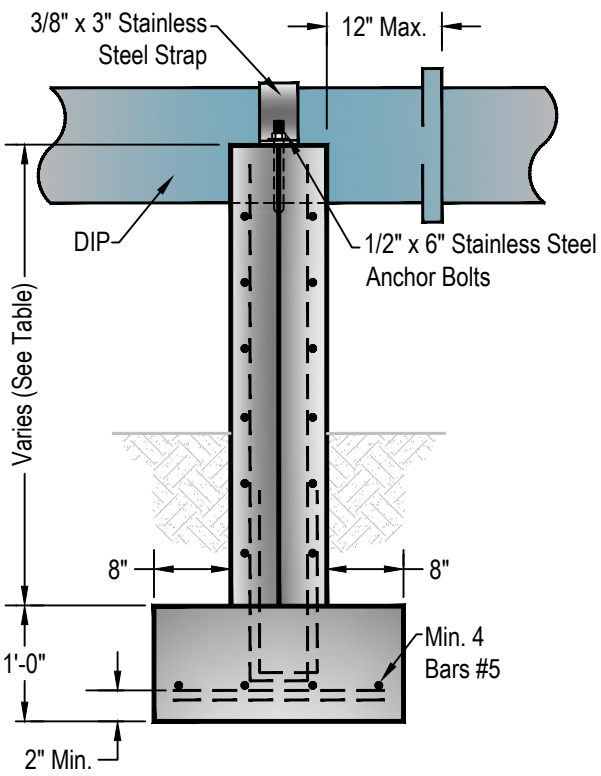
SECTION

LITTLE ROCK
Water Reclamation Authority
ONE WATER. ONE FUTURE.

STORM DRAIN CONFLICT BOX DETAILS

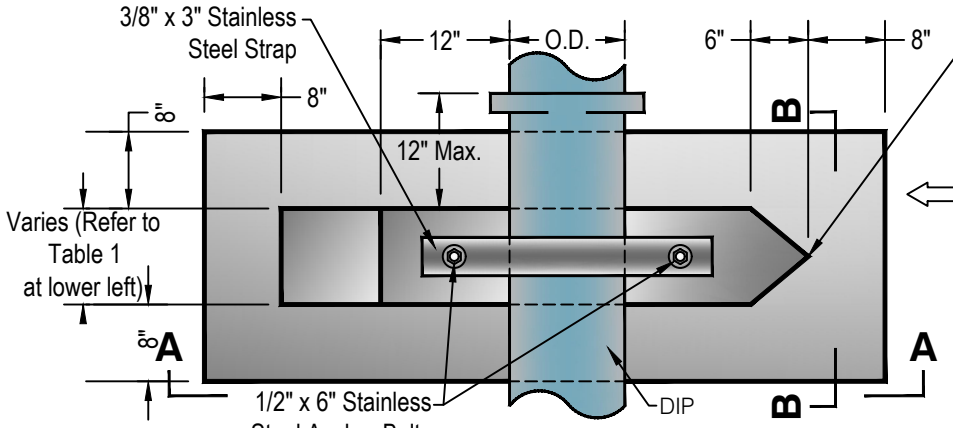
10.6

Prepared By: Scott Taylor
Updated: 8/6/2019 12:41:27 PM
Drawing Status: **APPROVED**
Filename: 10.6.dwg

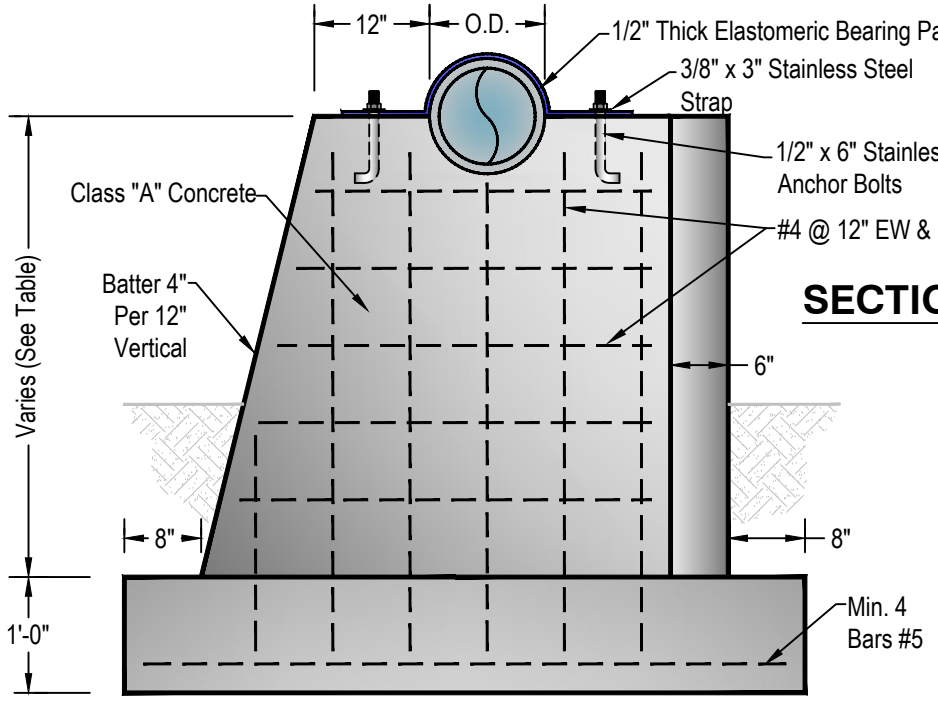


SECTION 'B'

TABLE	
WIDTH	HEIGHT
8"	0'-4' TOTAL
10"	4'-8' TOTAL
12"	8' OR MORE



TOP ELEVATION



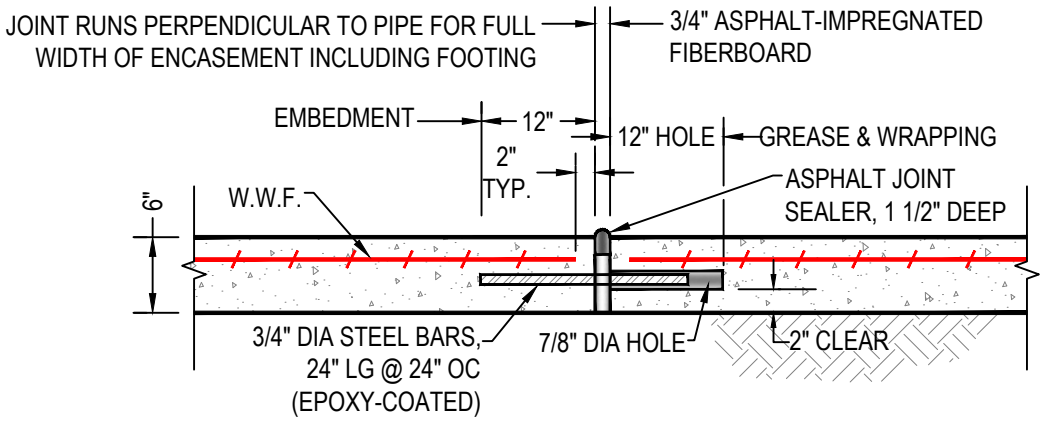
SECTION 'A'

LITTLE ROCK
Water Reclamation Authority
ONE WATER. ONE FUTURE.

PIER DETAILS

10.7

Prepared By: Scott Taylor
Updated: 7/16/2019 1:08:00 PM
Drawing Status: **APPROVED**
Filename: 10.7.dwg

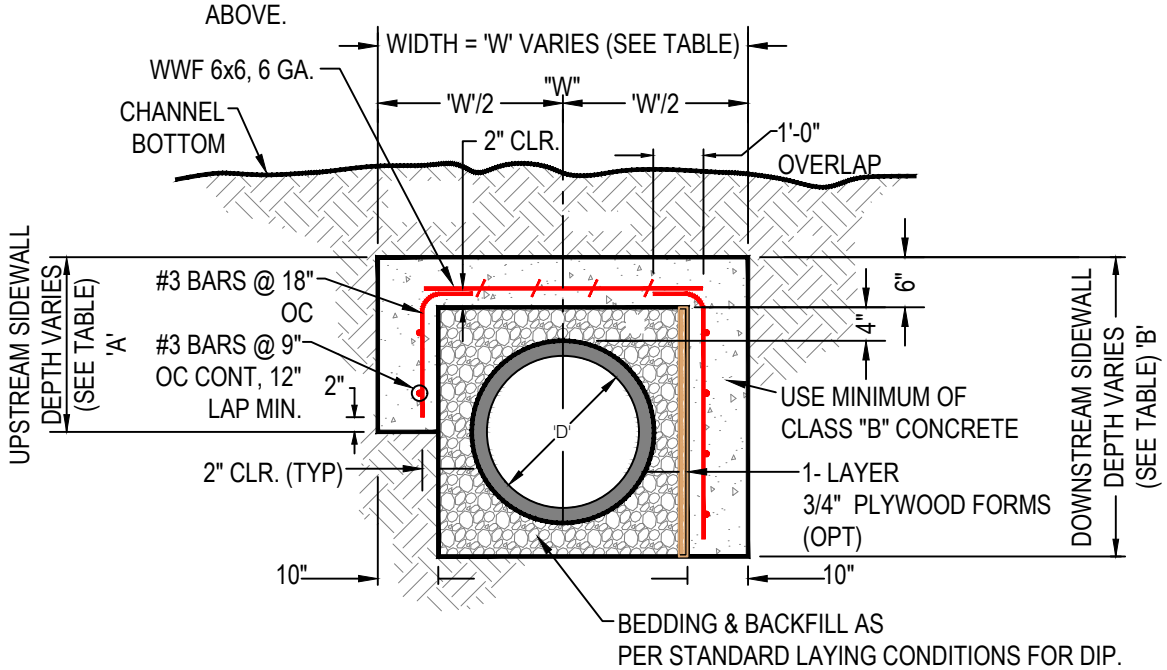


DOWELED EXPANSION JOINT FOR CONCRETE ENCASEMENT

ENCASEMENT WIDTH TABLE							
"D"	"W"	"A"	"B"	"D"	"W"	"A"	"B"
6" TO 10"	4'-2"	1'-5"	2'-4"	30"	6'-2"	2'-6"	4'-0"
12" TO 16"	4'-8"	1'-5"	2'-10"	36"	6'-8"	3'-0"	4'-7"
18" TO 21"	5'-2"	2'-0"	3'-3"	42"	7'-2"	3'-0"	5'-6"
24"	5'-8"	2'-0"	3'-6"				

NOTES:

1. PROVIDE DOWELED EXPANSION JOINTS AT 25' O.C., SEE DETAIL ABOVE.
2. PREVENT BONDING OF CONCRETE TO PIPE BELLS WITH POLYWRAP.



LITTLE ROCK Water Reclamation Authority
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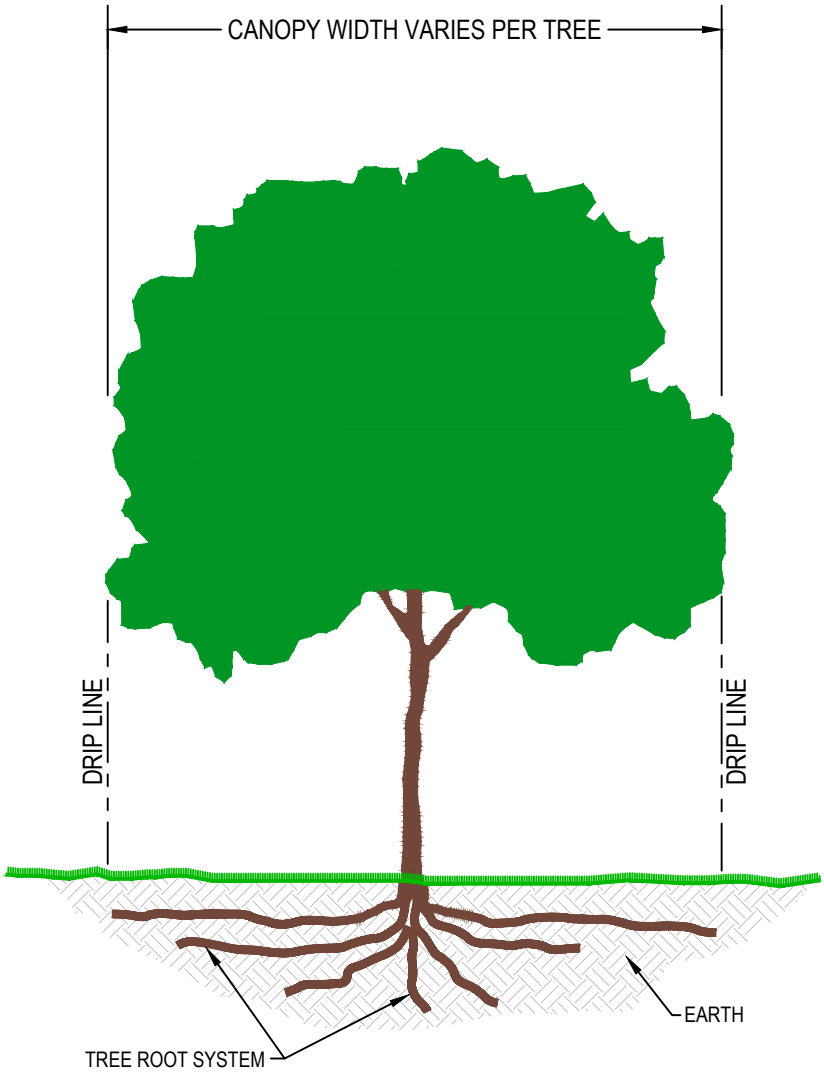
TYPE "D" ENCASEMENT DETAILS

10.8

Prepared By: Scott Taylor
Updated: 7/31/2019 9:59:44 AM
Drawing Status: **APPROVED**
Filename: 10.8.dwg



ELEVATION

NTS

LITTLE ROCK
Water Reclamation Authority
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TREE DRIP LINE DETAIL

10.9

Prepared By: Scott Taylor
Updated: 7/16/2019 1:08:19 PM
Drawing Status: **APPROVED**
Filename: 10.9.dwg